

# Paper, prices and politics

An evaluation of the Swedish support to the Bai Bang project in Vietnam

By Centre for International Economics

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A Sida EVALUATION REPORT

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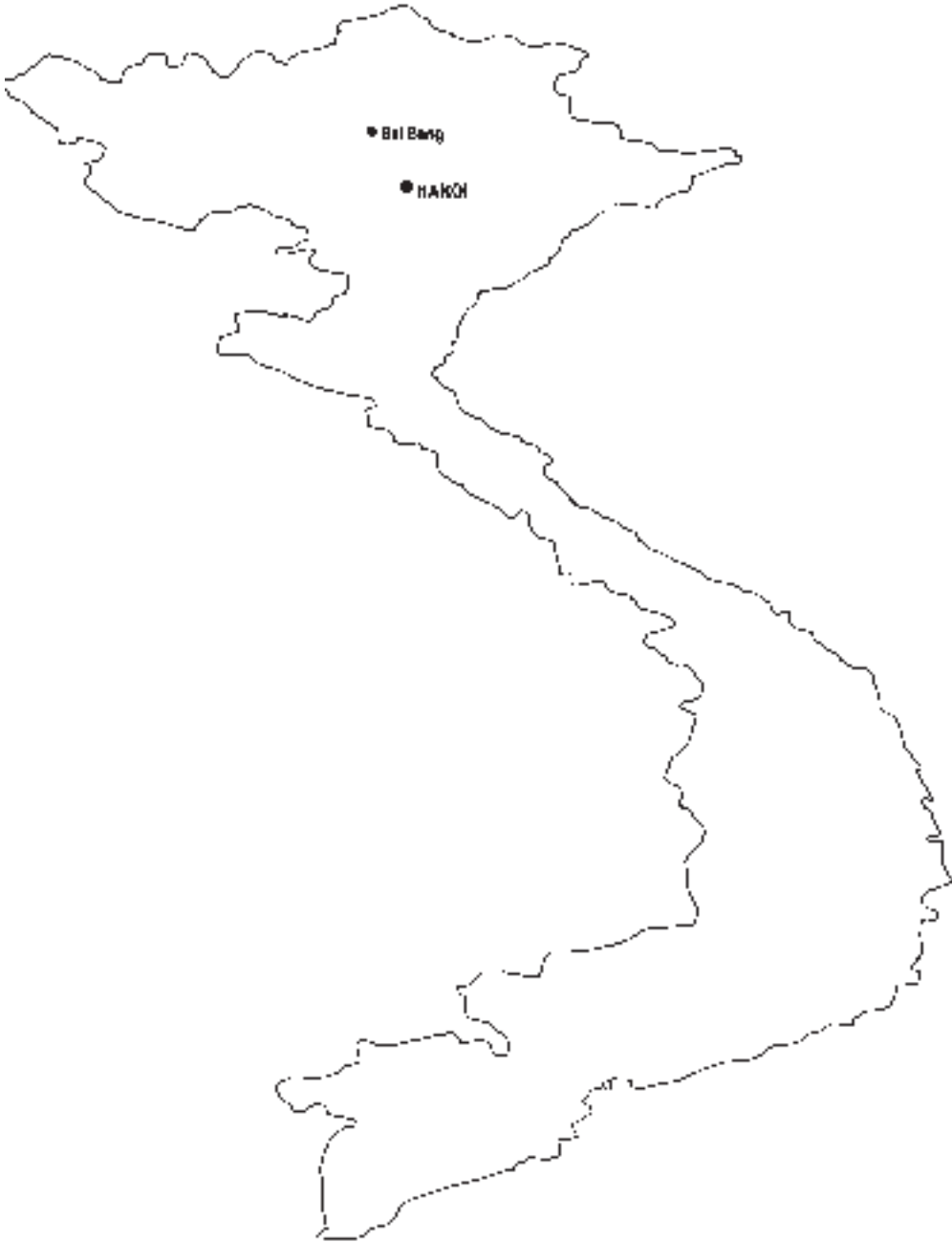
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THE TERMS OF REFERENCE for the evaluation of the Bai Bang project called for a multidisciplinary approach. Expertise was required in the analysis of financial accounts, the analysis of management and organisational issues, technical performance of the mill and forestry, the analysis of anthropological and socioeconomic issues and economic analysis. The Centre for International Economics assembled a team with expertise in all these areas.

- Nicholas Blower and Nguyen Quoc Dat of Price Waterhouse Hanoi undertook the analysis of the financial accounts of the Bai Bang Paper Company and Vinh Phu Raw Materials Company.
- Ngo Minh Hang of the Vietnam Management Initiative at Hanoi University undertook the analysis of the managerial performance of the two companies and their links to other institutions in Vietnam.
- Mr Allan Jamieson of North Forest Products, who was formerly Production Manager at Australia's largest fine paper mill, undertook the evaluation of the technical performance of the mill and forestry.
- Mandy Thomas, an anthropologist from the University of Western Sydney, assisted by two Vietnamese anthropologists, Pham Quang Hoan of the Institute of Ethnology in Hanoi and Do Thi Binh of the Centre for Family



*Paper stacks at the Bai Bang paper mill. Photo A. Berlin.*

and Women Studies in Hanoi, had responsibility for analysing the anthropological aspects of the social and cultural impact of the project.

- Adam McCarty and Hoang Van Hoa of the Institute for Economic and Development Studies at Hanoi University undertook the socioeconomic analysis of the project through a range of surveys.
- David Pearce, Derek Quirke, Bob Warner and David Vincent of the Centre for International Economics undertook the financial and economic modelling, the social cost–benefit analysis, the analysis of the impact of the project on human resource capacity building and the evaluation of the project’s relevance, contribution and achievement of its objectives.
- The team was led by David Vincent.

Our evaluation relies heavily on a large amount of information collected from many sources. Many people gave generous assistance in providing this information. Appendix 1B contains a list of the persons consulted during the course of the study. To this list must be added the large number of current and previous mill and forestry workers who participated in our surveys and group discussions. Anders Berlin and his colleagues at Sida provided valuable comments and guidance throughout the evaluation.

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# Abbreviations, definitions and terms

AFTA	ASEAN Free Trade Area
BAPACO	Bai Bang Paper Company
CEPT	Common Effective Preferential Tariff Scheme
CIEM	Central Institute for Economic Management
CMEA	Council for Mutual Economic Advancement
DALY	Disability adjusted life year
<i>Doi moi</i>	Vietnam's program of economic renovation, which commenced in 1990. The program embraced policy reform, greater reliance on market mechanisms and wholesale institutional reform.
EPZ	Export processing zone
EU	European Union
FRC	Forest Research Centre
IMF	International Monetary Fund
Kinh	Ethnic Vietnamese
MAI	Mean annual increment of tree growth (cubic metres per hectare per year)
MARD	Ministry for Agriculture and Rural Development
MOLI	Ministry of Light Industry
SCCI	State Committee on Cooperation and Investment
SOE	State owned enterprise
Subsidy period, period of state subsidies, subsidised era	Period of state controls and subsidies under the system of central planning before the advent of <i>doi moi</i> , which was decided in 1986 but did not become comprehensive until 1989.
TAP	Technical Assistance Program
VAS	Vietnamese Accounting System
VAT	Value added tax
VPMC	Vinh Phu Paper Raw Material Company
VPC (Vinapimex)	Vietnam Paper Corporation

VND	Vietnamese dong 1996 US\$1 = VND11 100 1997 US\$1 = VND12 500 1996 Sek1 = VND1655 1997 Sek1 = VND1637
WTO	World Trade Organization

## The mill and town today

Three times a day sirens wail across the Bai Bang mill and adjacent Phong Chau township announcing the end of an eight hour shift. The new shift has already arrived and replaces the workers as they leave their machines. In this way, the mill has been able to operate at, and even slightly exceed, its maximum production capacity in recent years.

The 600 workers of the finished shift make their way through the mill to the main gate. They leave their well maintained buildings and machines, and walk past the landscaped and manicured gardens towards their bicycles and motorbikes. From the new administration building, an imposing three storey structure of tinted glass and aluminium, the General Manager can observe the exodus. He will leave later to join some of the other managers for tennis at the Swedish camp.

The stainless steel main gate retracts at the push of a button and the workers depart. Most are on foot as they live nearby. Others are on bicycles or motorbikes, although few live more than 3 kilometres from the mill. They are well dressed and cheerful, happy to have a secure job in a profitable state enterprise. Nobody quits at the mill.

The road from the mill immediately greets Phong Chau township. Shops line the main street, which goes directly up a hill for about 1 kilometre to a T-intersection: left to Hanoi, right to Tuyen Quang province and, eventually, China. About 100 metres from the mill gate is the local hotel, an ugly Soviet-style building with a miserable quality of service. The mill owns and runs this hotel, while the local government owns and runs the former Swedish camp. Next to the hotel is an enclosed public swimming pool, 25 metres in length. The hotel and the pool were built out of the mill's 'social fund'.

Just past the hotel and down a small alley is the market of about 100 stalls. Fresh fish, meat and vegetables are plentiful. Prices are about one third less than those in Hanoi. Workers and other townfolk can buy a wide variety of consumer goods including toiletries, clothes and electrical goods. Most of these items come from China, but some are made in Vietnam and others smuggled in from Thailand.

The shops lining the road up the hill are mostly selling electrical goods. There is a film processing shop and a karaoke bar. Most buildings on the street are two storey, and those off the street one storey. All are made of brick, which was not always the case. Only 20 years ago, about 90 per cent of Phong Chau houses were cottages with thatch roofs and mud walls. It was a desperately poor area, like most of northern Vietnam.

At the top of the hill, mill managers turn left toward the most attractive housing in the township. These are a series of streets with double storey cottages and small gardens about 1 kilometre from the T-intersection – just across the road from the Swedish camp. The roads are sealed and the houses are well maintained. Here also is the gymnasium, an enclosed stadium about the size



of a basketball court. The Bai Bang social club – sedate dancing and karaoke – is part of the complex. These are also recent constructions funded from the mill's 'social fund' and finished just in time for the celebration of 15 years of mill production in November 1997.

The Swedish camp looks down upon the gymnasium from the other side of the main road. Although rarely full, it remains in use as a weekend retreat for Hanoi expatriates. The swimming pool is maintained, the tennis court lights work and 'Western meals' – mashed potatoes and schnitzels – can be arranged. Two of the four-bedroom villas, and many more of the smaller units, remain. Termites ate the rest. It is a tranquil and pleasant setting – a far cry from when over 700 Swedes, Finns and other foreigners crowded into it.

The camp area has been reduced over the years. It was initially about twice its present size. The barbecue area is now overgrown, like the lower tennis court. Swedes – mostly former workers on the project – still come and stay, sometimes as tourists and sometimes on business. The plans to expand the mill in the near future have drawn some back with an eye on selling equipment and services.

Casual observation, along with the many anecdotal stories of Swedes and Vietnamese, gives a strong impression of a mill that has brought great prosperity to the area. Today Phong Chau town stands out as a pocket of wealth in what remains a relatively poor province.

# Summary

## Bai Bang is Sweden's largest, most expensive and longest running development cooperation project

In 1974 Sweden began its largest development cooperation project – the Bai Bang project in Vietnam. The project involved construction of an integrated pulp and paper mill at Bai Bang about 100 kilometres north of Hanoi, and provision of the necessary infrastructure and training support to ensure a successful handover to Vietnamese management. Its overall objective was to raise Vietnamese living standards by providing a domestic production capacity to satisfy Vietnam's paper needs. From 1974 to 1995 Sweden committed about SEK2.8 billion (SEK6.5 billion in 1996 prices) to the project (mill and forestry) including side projects covering housing, transport and vocational training.

## Bai Bang represented an enormous development cooperation challenge

The project involved establishing a capital intensive industrial complex in a poor, labour intensive, centrally planned economy. The Vietnamese economy at the time was seriously depleted, after years of war, of functioning infrastructure, skilled labour and materials, and had no recent experience of how Western style construction and management systems operated.

The achievements at Bai Bang documented in this evaluation are impressive and have been registered against considerable odds. They reflect Swedish perseverance and willingness to progressively commit more and more resources to overcome a succession of obstacles which threatened the project. And this perseverance and generosity was matched by Vietnamese determination and optimism to ensure that Bai Bang was successful.

## The mill today

### The mill is profitable and pays high wages though liquidity is low

The mill is trading profitably and meeting its taxation obligations – assisted by a 40 per cent tariff and occasional prohibitions on imported paper. Sales growth in recent years has been strong – all of which is to the domestic market. Average wages of mill workers are about double those of other state enterprise workers and living conditions of workers are excellent. The mill has low debts and a strong net asset base though business liquidity is low. Having received its capital as an aid transfer, the mill does not have to make a commercial return on this capital. This greatly improves the mill's prospects for achieving longer term financial viability.

## Mill management structures and performance are superior to normal Vietnamese practice

Swedish experts introduced conventional Western style management principles with a Scandinavian flavour of equity and caring. It was not until 1989 when Vietnam's transition to a market economy began in earnest that these principles could be effectively applied. Management practices at Bai Bang are admired throughout the state owned enterprise sector.

## The mill lacks financial independence, which is a threat to its longer term viability

Bai Bang mill is a member company of the Vietnam Paper Corporation (VPC), a general corporation controlling the country's largest pulp and paper mills. VPC regulates the activities of these mills, restricting competition between them. Bai Bang is constrained from operating as an independent profit maximising business. VPC uses Bai Bang's profits to cross-subsidise other less profitable mills and controls its input purchases, product pricing and investment decisions.

## The paper mill is now operating at full capacity

Paper production has climbed rapidly since 1994 assisted by new investment, operational changes and pulp imports. Production in 1996 of 57 000 tonnes exceeded the design capacity of 55 000 tonnes.

## The pulp mill is functioning below design capacity

Pulp mill production is at 44 000 tonnes per year compared with planned capacity of 48 000 tonnes. Chip size and quality are highly variable – which reduces pulp quality – and losses are high. A loss of digester time through steam shortages has constrained production below capacity.

A shortage of steam is the biggest constraint to production. The whole mill runs or stops according to the performance of the power boiler. The installation of only one boiler was a major design fault.

## The chemical plant functions well

Chemical production exceeds mill requirements. Surplus chemicals are sold to earn mill revenue.

## Paper quality is improving

The mill makes 16 basis weights from 52 to 120 gsm. Quality is being continually upgraded – but further improvements are needed to withstand import competition in an increasingly demanding domestic market. Domestic consumers have a generally favourable view of Bai Bang paper.

## Forestry operations

### The profitability of forestry operations is low

Vinh Phu Raw Materials Company (VPMC) has responsibility for forestry operations and holds a monopoly under the direction of VPC on supplying logs to the Bai Bang mill. VPMC makes a small profit and a modest contribution to government revenue in a heavily regulated commercial environment. Decision making processes at VPMC are Vietnamese in nature with little evidence of a Swedish influence.

### A professional plantation program is in place and log supplies are now adequate for mill needs

A professional program of evaluation of species, silvicultural techniques and propagation methods, coupled with the dissemination of information to growers, has been established around the Forest Research Centre near Bai Bang. Improvements in land tenure arrangements – which have authorised the allocation of state forest land to private individuals, land contracts with revenue sharing arrangements between farmers and VPMC, state subsidies, a growing awareness of the environmental advantages of reforestation and greatly improved incentives for forest workers – have led to a massive expansion in tree planting.

### Housing and transport side projects have fulfilled their aims

The housing side project has provided a high standard of community living conditions making Bai Bang an attractive place to live and work in. The transport side project, by substantially enhancing the efficiency of mill operations, has played a critical role in the successful functioning of the mill.

## Economywide impact

### The mill has a substantial impact on the regional economy

The mill, as the largest enterprise in Phong Chau district of Phu Tho province, contributes substantially to local business activities through purchase of local inputs, paper sales for further processing and spending of mill wages by workers and their families. The mill also makes a significant contribution to local infrastructure – by supporting schools, medical facilities and the environment, and the provision of electricity and water, roads and leisure facilities. About VND42 billion per year is injected into the forest supply regions through log purchases.

### But the economywide impact of the mill is small

Through its effects on employment, import replacement and government revenue we estimate that the mill generated, in 1996, about VND465 billion

of national income (real GDP increase of 0.18 per cent). This supported about VND217 billion of additional private consumption (0.1 per cent increase, which is equivalent to VND2900 per citizen). The mill contributed about VND63.3 billion in additional government revenue (the mill accounts directly for 0.085 per cent of government revenue). The mill made a positive contribution to the balance of trade of VND445 billion.

While these figures seem large in absolute terms, they are small in relation to economywide totals – the mill represents only 0.09 per cent of Vietnam's GDP and mill forestry requirements are less than 1 per cent of Vietnam's forestry production.

### Mill and forestry wage income is distributed in favour of males employed at the mill

Mill and forestry combined employed 5509 full time workers in 1996 – 2858 at the mill and 2651 in forestry. Sixty-six per cent of mill workers were males and 34 per cent females. Seventy per cent of the mill's wage bill went to males and 30 per cent to females. The average wage earned by females is about 10 per cent less than for males, reflecting a higher percentage of females in lower wage categories. Fifty-six per cent of salaried forestry workers were males and 44 per cent females. Wages of mill workers are about 3.5 times the average forestry worker wage. This reflects the much higher value product of mill labour.

About 54 per cent of mill and forestry wage income accrues to male mill workers, 24 per cent to female mill workers, 12 per cent to male forestry workers and 10 per cent to female forestry workers.

## Contribution to human resource capacity building

### The project's contribution to human resource capacity building has been substantial

A comprehensive and highly successful human resource capacity building program was undertaken. On-the-job training was provided to thousands of construction workers – many of whom took their skills elsewhere in the economy. An effective vocational training school was established. The school now trains workers for all Vietnam's paper mills (1200 trainees are working in other mills) and by the end of 1997 had provided over 20 000 person courses. Transfer of knowledge programs to enable Vietnamese handover were conducted. And training of forest workers has occurred on a large scale.

## Training has made workers more productive

The various training initiatives have left behind a mill workforce with high skill levels (45 per cent are currently classified as skilled and 42 per cent as semi-skilled). Skills training is highly prized and is needed for workers to advance professionally.

Indicators of the value of the training are provided by the high wages of mill workers, a mill now running at full capacity and the high demand for places at, and graduates from, the vocational training school. Training has also improved the life choices and social position of workers.

## The legacy of the Scandinavian management model is strong

Exposure to the Scandinavian management model has allowed the mill to flourish since the advent of *doi moi*. And exposure to the Scandinavian management model at Bai Bang influenced a Vietnamese policy institution which played a major role in the formulation of the economic and state enterprise reforms.

# Social and cultural impact

## Worker living standards have been improved substantially

The project has delivered a substantial and sustained improvement in the living standards of mill workers. The Phong Chau district around the Bai Bang mill stands out as a pocket of wealth in a poor province. Mill workers are prosperous. They enjoy high wages, improved access to consumer goods, improved health, housing, transport, education and training opportunities, and a rich cultural life. Township businesses are sharing in this prosperity.

## Living standards of forestry workers have also improved sharply

The presence of the mill has raised forest worker living standards considerably above those of local farmers – which is the relevant comparison. Improved land tenure arrangements have extended the benefits to private farmers willing to grow logs for the mill. But more needs to be done to improve the health of women forest workers.

## The benefits have been delivered without creating significant social problems

Apart from some disquiet about the increasing social differentiation between households and the large gap between the wages of mill and forestry workers, mill activities have not been accompanied by increased social problems.

## The benefits have been shared by both Kinh and ethnic minorities

Ethnic minorities in the forest regions have participated in the benefits – with some training courses designed specifically for their participation. Although traditional lifestyles have changed, most regard the change in livelihood – from shifting agriculture to stable farming and tree growing – as beneficial to family welfare. There is no evidence of overt discrimination against ethnic minorities.

## But the number of beneficiaries is small

Around 25 000 jobs are being sustained by the mill – mill and forestry employment and employment in closely dependent industries. This number is small relative to the region's population and the large injection of donor funds. Pulp and paper mills are extremely capital intensive.

## A showcase Western style mill management system, and trust and openness in dealing with outsiders are enduring Swedish influences

Language barriers and bureaucratic restrictions inhibited cultural exchange in the early years of the project. And social tensions arose from time to time. Both Swedes and Vietnamese persevered to overcome social tensions.

There is enduring goodwill to Sida and the Swedish people who worked on the project. Styles of work and management are the key attributes learned from the Swedes. And trust and openness in dealing with foreigners is an important Swedish legacy.

# Social costs and benefits

## The mill provides social benefits through a number of avenues

The mill contributes to Vietnamese living standards through a number of pathways. It generates profits and makes taxation payments to the government. It pays more for logs than their value in other uses. Hillside rehabilitation through planting trees adds to agricultural production. Workers earn more than they would get in other activities. Social services are provided to the wider community. Many people trained at the mill are employed elsewhere.

## The mill also imposes social costs

Some social costs are imposed through mill emissions. While the mill is dirty by one US standard, it is clean by Asian standards and even by other Western standards. The available evidence suggests that at current levels of production the environment can absorb the effluent.

And, because of the tariff on imported paper, consumers are paying a higher price than necessary for their paper.

## Social benefits exceed social costs

Our estimates suggest *net* social benefits in 1996 of between VND21 796 million (which assumes that, in the absence of the mill, consumers could import paper at world prices) and VND143 668 million (which assumes that, in the absence of the mill, the tariff on imported paper would still be in place to protect other mills). This translates to benefits of between US\$2.2 million and US\$13 million.

## Future financial viability

### Mill profits are most sensitive to the price of paper and domestic pulp production

The domestic price of paper – which is influenced by the world price in foreign currency, the exchange rate between the dong and foreign currency, and the tariff on imported paper – is a critical determinant of mill profitability. The production of domestic pulp, which is cheaper than imported pulp, is also an important determinant of profitability.

### The mill could survive without tariff protection

If domestic pulp production could be increased to design capacity, unit cost reductions of about 5 per cent would be needed for the mill to remain profitable without tariff protection. But if pulp production remains at current levels, cost reductions of about 11 per cent are needed. There are numerous opportunities for the mill to reduce costs.

### New investments and independence from VPC could make the mill's future secure

If the mill did not have to pay into VPC's depreciation fund, its profits and ability to fund new investments would increase significantly. New investment – in a power boiler and in paper production capacity to achieve 100 000 tonnes of paper per year – could be profitably funded by an independent Bai Bang mill, even if it was still required to meet the depreciation 'tax'. For the mill to fund this new investment and break even in an environment of no tariff protection, a 10 per cent reduction in unit costs of production is needed. And the mill would be in a strong position to withstand exchange rate fluctuations and increases in the price of logs.

## Achievement of objectives

### All stated objectives for the main project and side projects have been met

The mill, under Vietnamese management, is producing paper at maximum capacity and is making a positive contribution to Vietnamese living standards.



Forestry operations are on a sustainable basis – with positive environmental benefits. Mill employees enjoy high housing standards. Transport problems experienced in the early stages of the project have been largely overcome.

### Implicit political objectives are also likely to have been met

Through the project Sweden was able to demonstrate its support for the Vietnamese people to end foreign intervention in Vietnam. And knowledge gained about Vietnam's institutional, social, political and economic structures was valuable to Sweden. The knowledge and goodwill created by Sweden's commitment to the project earned Sweden an important 'place at the table' as a trusted source of advice on Vietnam's economic transition. The project also promoted Swedish commercial objectives – 85 per cent of project outlays were paid to Swedish companies.

### Whether Sweden got value for money depends on what the alternative uses of the funds were and the valuation placed on the broader and more intangible benefits of the project

If the Swedish money spent on Bai Bang had been invested instead and the interest used to finance general imports by Vietnam, the amount available to finance imports would have been several times the estimated net benefit of the mill in 1996. But this is a crude and impractical benchmark. It is likely that the real value of resources transferred to Vietnam was considerably less than Sida project outlays. And there are important spillover effects of the project, which have not been captured in the quantitative analysis. The values Sweden places on implicit objectives of the project and how well they are judged to have been met are important determinants of the value for money assessment.

## Project's relevance

### Vietnam's paper needs are increasing rapidly

Per capita consumption of paper is closely related to per capita income. With its rapid income growth, Vietnam's paper requirements will also increase rapidly. These must be met by domestic production and/or imports. Whether paper production at the mill is an efficient use of Vietnamese resources is a key consideration in the project's relevance.

Vietnam has a comparative advantage in growing pulp logs – high rainfall mountain land with low value alternative uses to forestry and a hardworking, low income mountain area workforce. A capital intensive mill may therefore still be consistent with the country's strong comparative advantage in labour intensive activities.

## But the mill must adapt to operate without import protection

The protection against imports enjoyed by the paper mill sector of Vietnam is inconsistent with efficient resource use. But the restrictions on the mill's commercial activities imposed by VPC restricts its ability to make excess profits through import protection. As paper protection is phased out under Vietnam's international trading agreements, the mill will need to achieve significant cost efficiencies to remain profitable. Further reforms to state owned enterprises which allow the mill to function as a truly independent financial enterprise will be necessary for it to remain viable over the longer term without protection.

## Lessons – understanding conditions for sustainable development

### Bai Bang is an example of sustainable development cooperation

Mill activities are technically sound and financially viable when the original capital costs are treated as sunk. Pollution is small and forestry activities are sustainable and delivering environmental benefits. Skills training is addressing the industry's human capital needs. Against many expectations, Bai Bang is an example of a sustainable development cooperation project.

### The Bai Bang experience contains a number of important lessons

Policies and institutions matter a lot. Changes brought about by *doi moi* – land tenure reforms, more liberal pricing, performance based remuneration, and more open trade and exchange rate policies – are important reasons why the mill and forestry are sustainable. The project helped the reform process – and it was fortunate for the project that the reforms occurred.

Perseverance and commitment pay. Support at the highest level is needed for projects of the size of Bai Bang to succeed. And perseverance and optimism on both sides is needed – Swedish determination was matched by that of the Vietnamese.

Receptivity and flexibility are important. Mechanisms for adjusting project elements to accommodate shifting priorities and profound changes in the project environment are needed. This requires effective structures for interaction between cooperating partners.

Research is essential. Detailed information on the physical and socioeconomic context for a project is needed before initiation if large cost overruns are to be avoided.

Local ownership of projects is essential. Handing operational responsibility to the recipient with donor involvement shifting to the provision of advice creates good incentives for success.

Cultural differences should be prepared for. Good management of cultural issues speeds progress. This may require training of advisors and foreign workers.

### Conditions for sustainable development

The Bai Bang experience has demonstrated that improvements in economic wellbeing in developing countries has as much to do with institutions, policies and building human capital as it does with transfers of physical capital.

# 1 Introduction

IN 1969 VIETNAMESE AND SWEDISH government officials began discussions on possible Swedish aid to Vietnam's industrial sector. At that time Vietnam viewed the acquisition of state of the art industrial technology as a key ingredient to its economic development. Forestry land was available and Vietnam was also seriously in need of paper for educational and other purposes.

The outcome was the so-called Bai Bang project, which aimed to improve living standards through expanding domestic paper production in the Bai Bang region, about 100 kilometres from Hanoi. The project involved the construction of an integrated pulp and paper mill, and the provision of the necessary physical infrastructure, forestry and training support to ensure a successful handover to Vietnamese management.

Bai Bang was designed as a development cooperation rather than turnkey project.

- The Swedish contribution was to supply the process machinery and construction material not locally available, the technical knowledge for design, engineering, construction and installation, sufficient training to allow the Vietnamese to run the plant and support for forestry through silviculture assistance, vehicle training and maintenance, and design of harvesting and transport systems including road construction.
- The Vietnamese were to contribute the necessary labour force, domestic construction material, transport and port facilities and services, facilitate the movement of expatriate personnel and run the necessary forestry operations to ensure sufficient wood fibre for the mill.

Bai Bang was to become Sweden's largest and longest running development cooperation project. Its initial five year time scale of 1975 to 1980 was extended for a further five years in 1985 then further extended for a phasing out period between 1985 and 1990. It is also the most controversial with a high public profile.

The Swedish media has given considerable attention to:

- the rationale behind the choice of the Bai Bang project;
- the political processes through which it was conceived and implemented;
- the problems encountered in implementation; and
- the considerable budget and time overruns to overcome these problems.

## The challenge at Bai Bang

The Bai Bang project represented an enormous development cooperation challenge for Sweden.

- It involved establishing – in a low income, essentially undeveloped, labour intensive, centrally planned economy – a capital intensive industrial complex drawn from a high income industrialised economy.
- The Bai Bang region was virtually devoid of complementary infrastructure – roads, power, housing and skilled workers. In fact, Bai Bang was deliberately chosen by the Vietnamese authorities because of these shortcomings. The project was envisaged as the catalyst for development in an extremely undeveloped region by encouraging the movement of people from the overpopulated Red River delta.
- There was no firm understanding of the quality and quantity of the forest resource needed to support the mill.
- Vietnam was an unknown quantity as an aid recipient. There was an enormous cultural gap between the Swedish and Vietnamese counterparts. The gap was accentuated by language difficulties, vastly different economic systems, living standards, and ways of thinking and doing things.

The project also represented an enormous challenge to Vietnam.

- The economy at the time was seriously depleted of skilled labour and materials as it attempted to recover from a long and exhausting reunification war. Incentives to divert labour and materials (both local and imported for the project) to other activities were large.
- There was no recent experience at the time among the political and bureaucratic system of how Western-style construction and management systems operated.
- The then system of central planning and strict bureaucratic controls lacked the capacity to provide appropriate incentives to workers whose most urgent priority was to get food to sustain them and their families.
- The forest resource was seriously depleted and Vietnam lacked the capacity to reverse this depletion.
- The mill was designed to provide low quality pulp to make paper for domestic consumption in an essentially closed economy – yet after the *doi moi* reforms the same configuration was expected to produce paper of sufficient quality to compete against imports.

## Project scope and financial outlays

The Bai Bang project involved Sida support of about SEK2.8 billion over the period 1974 to 1995 (equivalent to about SEK6.5 billion in 1996 prices) to fund:

- construction of an integrated pulp and paper mill involving a chemical plant, power plant, maintenance enterprise, transport enterprise and paper factory;
- management of the facilities until handover to the Vietnamese;
- a forestry component involving facilitating the establishment of a forest research centre, forest training school, and plantation and soil conservation support;
- a vocational training component centred around the establishment of a vocational training school;
- a housing project to supply mill employees with good quality housing; and
- a transport project to build the necessary infrastructure to ensure effective transport of raw materials to the mill.

The project was originally conceived as a package covering construction of the pulp and paper mill, support for development of forest operations (but with the main forestry responsibility with the Vietnamese), vocational training and social infrastructure investment. When the plant commenced production in the early 1980s the need for input support through side projects became more apparent leading to the specification and funding of vocational training, plantation and soil conservation, housing, transport and living condition projects as independent side projects.

About 97 per cent of outlays were spent up to June 1990, which marked the withdrawal of Swedish management from the mill. The remainder was spent between July 1990 and June 1995 on extensions to side projects, especially the plantation and soil conservation project (table 1.1).

About 75 per cent of the Swedish financial contribution was spent on the mill complex and 15 per cent on forestry, including plantation development (chart 1.2).

Since 1995 Sida has continued to support the Bai Bang project indirectly through its Rural Mountain Development Program, which runs from 1996 to 2000. An important component of this program – assisting farmers in the northern provinces that comprise the mill's raw material area – is to replant bare hillsides for both soil and water conservation, and to provide logs for pulp and paper.



*The construction phase did not take off until 1977. Photo WP-systems archive.*

## The project from 1969 to now

The history of the Bai Bang project is a long and complicated one. Box 1.3 contains some key milestones. Several factors stand out.

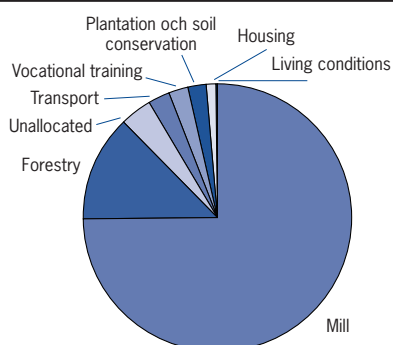
- The drawn out planning and construction phase.
- The 15 years needed after production commenced before production reached planned capacity.
- The addition of a succession of side projects (and additional expenditure) throughout this period to facilitate the objectives of the project being achieved.

1.1 Swedish financial contribution <sup>a</sup> to the Bai Bang project SEK million					
Component	Planning and construction phase	Initial operations phase	Withdrawal phase	Post-withdrawal support	Total
	1974 – June 1983	July 1983 – June 1985	July 1985 – June 1990	July 1990 – June 1995	
<b>Main project</b>					
Mill	1 551.3	183.6	331.5		2 066.4
Forestry	122.5	69.1	162.1		353.7
Unallocated	11.8	30.3	56.2	7.6	105.9
<b>Side projects</b>					
Vocational training		5.2	44.6	14.9	64.7
Housing		0.5	30.8	0.8	32.1
Transport		0.3	62.1	9.6	72.0
Plantation and soil conservation			29.6	36.5	66.1
Living conditions				5.2	5.2
<b>Total</b>	<b>1 685.6</b>	<b>289.0</b>	<b>716.9</b>	<b>74.6</b>	<b>2 766.1</b>

<sup>a</sup>There was also a Vietnamese financial contribution, which was envisaged as being about 10 per cent of initial project costs.

Source: Berlin (1997); Scanmanagement (1990).

### 1.2 Composition of Bai Bang project expenditure



Data source: Table 1.1.



### 1.3 History of Bai Bang project: some milestones

- 1969** Vietnamese delegation visits Sweden – discussions about possible Swedish aid to Vietnam's industrial sector.
- 1970** Swedish delegation visits Vietnam to determine appropriate sectors for Swedish assistance – preliminary report prepared on potential in forestry sector.
- 1971** Project alternatives evaluated.
- 1972** Specific report on Bai Bang project delivered. Envisaged budget of less than SEK500 million for a four year project.
- 1973** Preliminary work and negotiations on project.
- 1974** Intergovernment agreement signed to implement project.
- 1975–76** Preconstruction phase.
- 1977–80** Construction phase. Sida contribution of SEK770 million (adjusted to SEK920 million to cover higher than anticipated inflation and further adjusted to SEK1055 million to cover increased costs because of delays in purchasing equipment) was for a complete project covering investment in the pulp and paper mill, development of forest operations, vocational training and social infrastructure investment.
- 1980** Budget estimated to blow out to SEK2000 million.
- 1981** Commencement of pulp and paper production at mill.
- 1982** Official inauguration of facilities.
- 1983** Recognition of the need for input support through independent side projects.
- Housing project (to supply mill employees with good quality housing). Budget of SEK55 million.
  - Transport project (to ensure effective transport to and from mill). Budget of SEK30 million – increased to SEK97 million in 1984.
  - Vocational training side project. Budget of SEK44 million.
- 1984** Poor conditions of forestry workers exposed. Additional SEK170 million agreed for forestry component (to create a forestry organisation capable of supplying the mill with enough fibrous raw materials in an environmentally acceptable manner). Disbursement of SEK120 million of this conditional on improved working conditions for forest workers and new project organisation between the mill and forestry. Additional SEK330 million agreed for mill.
- 1986**
- Specific agreement for forestry component as a side project – plantation and soil conservation project. Budget of SEK40 million.
  - Additional SEK10 million to support recurrent costs of vocational training centre.
- 1990**
- End of Sida support for mill and forestry under Bai Bang project.
  - Withdrawal of Swedish management.
- \*\*\*\*\*
- 1991**
- Project to improve living conditions of forest workers. Budget of SEK5 million.
- ↓
- 1994**
- Ongoing forest support program by Sida until 1995.
- ↓
- 1994** Technical assistance program funded by Sida (SEK20 million) spare parts (SEK18 million), transport project (SEK10 million), vocational school (SEK4 million) and environmental protection (SEK20 million).
- ↓
- 1995** Significant new investment at mill by Vietnamese management.
- ↓
- 1996** Mill production reaches planned capacity of 55 000 tonnes of paper.

## 1.4 The Bai Bang complex: a snapshot

### Organisational structure

- Pulp and paper mill run by Bai Bang Paper Company (BAPACO), a state owned enterprise.
- Log procurement for the mill controlled by the Vinh Phu Paper Raw Materials Company (VPMC), a state owned enterprise.
- Both BAPACO and VPMC are members of, and largely controlled by, the Vietnam Paper Corporation (VPC), a state owned general corporation set up in December 1995 to control and coordinate pulp and paper production in Vietnam.

### Production (1996)

- 57 000 tonnes of paper (compared with mill design capacity of 55 000 tonnes). (Production in 1997 of 53 630 tonnes.)
- 41 400 tonnes of bleached craft pulp (compared with design rate of 48 000 tonnes).
  - With a further 17 158 tonnes of imported pulp (29 per cent of pulp requirements).
- Largest paper mill in Vietnam accounting for 26 per cent of domestic paper production and 70 per cent of domestic market for writing and printing paper.

### Product mix (1996)

- Printing and writing paper with basic weight range from 50 to 120 grams per square metre (gsm) – nominal standard of 60gsm.
- Brightness 70 to 80 per cent ISO.
- Copy paper, computer forms and telex paper.
- Lined paper and textbooks.

### Financial performance (1996) – VND11 000 = US\$1

- Turnover: VND550 billion.
- Profit: VND42 billion (most profitable paper mill in Vietnam).

### Employment and wages (1996)

- 2800 persons employed in mill.
- Average wage of VND1 million per month (about double average wage in other paper mills and state owned enterprises).

### Forestry operations (1996)

- Raw material area of 365 000 hectares.
- Available forest area for mill is 250 000 hectares (bamboo 52 000 hectares, plantation forest 61 000 hectares and 136 000 hectares earmarked for plantations).
- Over 35 000 hectares of successful plantations in northern provinces since 1984.
- National plan to establish 5 million hectares of plantation by 2010 with 1 million hectares designated for pulp production.
- Plantation logs grown on a 7 to 10 year rotation with average MAI of 6 to 15 cubic metres per year.

*Continued on next page*

## 1.4 The Bai Bang complex: a snapshot *Continued*

### **Forestry operations (1996)** *Continued*

- Mix of 30 per cent long fibres (bamboo) and 70 per cent short fibres (eucalypts, manglieta, styrax and acacia).
- 2600 persons directly employed by VPMC with up to 10 000 persons employed in all forest operations.
- Average log price of VND360 000 per tonne ex-mill door and VND190 000 per tonne to growers.
- Eighty-five per cent of logs supplied by forest enterprises (attached to VPMC and provinces) and 15 per cent from private growers (farmers).

### **Technology**

- Two twin-wire paper machines – reel width 3.8 metres, operating speed 500 to 600 metres per minute.
- Three pulp digesters – 140 cubic metres each. Four stage bleaching system.
- Power plant of: one coal fired boiler, 145 tonnes of steam per hour; one recovery boiler, 36 tonnes of steam per hour; two turbines and two generators with total capacity of 28 megawatts.
- Chemical plant with design rate of 7000 tonnes chlorine per year (annual chlorine use of 5000 tonnes with surplus chlorine and other chemicals sold to yield about VND2 billion annually).
- Transport enterprise: 40 trucks (300 tonnes total capacity), 12 barge trains (9600 tonnes total capacity ) and modern river port.
- Well equipped maintenance enterprise in mechanical, electrical, measurement and control systems.

### **Future plans**

- New investment approved in April 1998 to:
  - improve paper quality;
  - expand pulp capacity from 48 000 to 61 000 tonnes per year; and
  - expand paper production from 57 000 tonnes to 100 000 tonnes per year by the year 2000.

Box 1.4 summarises the present day performance of the mill and forestry operations.

## A snapshot evaluation

In this report we provide a snapshot evaluation of the impact of the Bai Bang project on the Vietnamese economy and its people. Our focus is on conditions today, some seven years after the withdrawal of Swedish expertise and financial support, rather than the events that have led to today's outcomes. Our 'snapshot evaluation' is complemented by a 'process evaluation' being undertaken by the Christian Michelsen Institute and which provides a strong historical perspective on the project.

The snapshot approach differs from the more traditional approach to project evaluation, which involves comparing the time path of costs and benefits

incurred over the life of the project. In the case of Bai Bang, with its long and tortuous history, putting together such a time path would be difficult and of doubtful relevance. The key issue is how well the project is performing today and the contribution it is making to Vietnam.

The snapshot approach measures impacts – mill and forestry performance, economic impact, impact on people – at one point in time relative to a counterfactual of no Bai Bang project. In looking at the situation in the economy and region today, it attempts to isolate the effects of the Bai Bang project from the effects of all other events and changes shaping today's outcomes in Vietnam. The performance of the mill today and its social and economic impact has been greatly influenced by this timeline of events and changes.

The counterfactual in our approach is not only no Bai Bang, but also no alternative form of development assistance to Vietnam. In this regard, the evaluation differs from what would probably have been the appropriate ex ante evaluation if Sida were committed in the early 1970s to some kind of large scale development cooperation activity. However, it is not really feasible to construct other counterfactuals involving alternative forms of development assistance to Vietnam. These were never developed sufficiently to the status of realistic alternatives.

In the context of the momentous set of events and changes that Vietnam has experienced since the project began, the snapshot approach has considerable appeal. Its emphasis is on how things are today rather than the path followed to get there. But some caution is needed in its application. Ideally, the snapshot year should provide a 'typical year' representation of outcomes. This is most critical in the case of mill performance. Our snapshot for the living conditions of mill and forest workers is late 1997 – early 1998 when our field survey work was undertaken.

Our snapshot year for the analysis of mill financial performance and economic contribution is 1996. This is the year in which mill paper production finally reached planned capacity.

It was also a tough year for the world paper industry with world prices significantly below their 1994 and 1995 levels. Vietnam's producers faced strong competition from imported paper and price reductions were needed to clear a build up in paper stocks. The duty on imported paper was increased (to 40 per cent for printing and writing paper, and to 20 per cent for newsprint) to assist domestic producers.

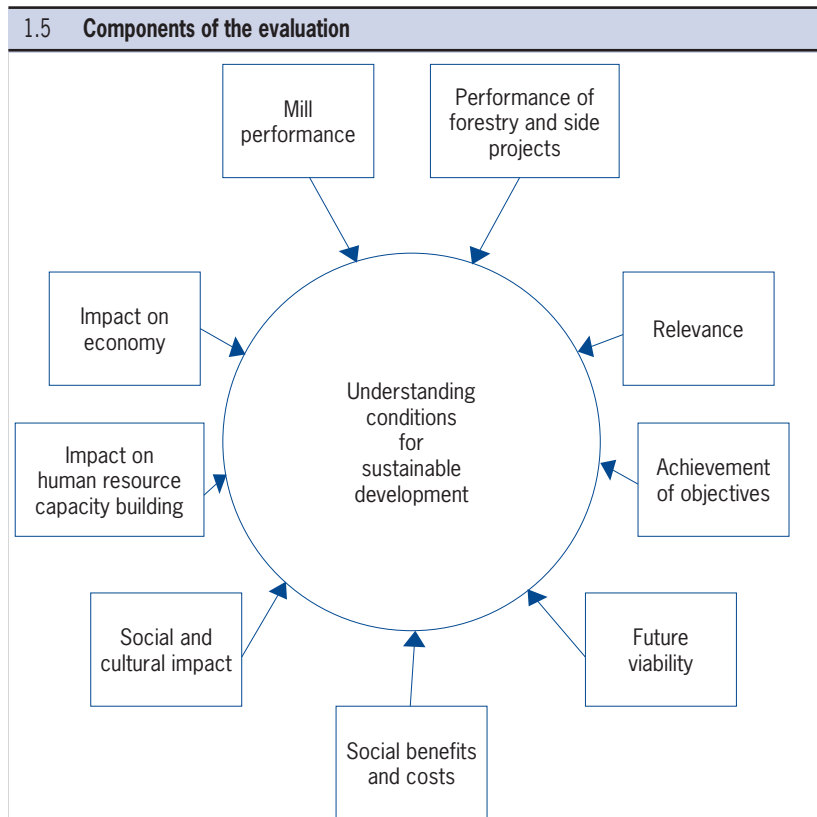
World paper prices fluctuate considerably from year to year in response to changes in production and demand – both of which can be substantial. Judging how representative 1996 trading conditions are of 'normal' trading conditions is also made more difficult by the uncertainties for the pulp and paper industry of the Asian financial crisis and how long the crisis will last. The key player in the region is Indonesia, which has put in place a threefold increase in pulp and paper production capacity since 1990. The massive devaluation of the

Indonesian rupiah will stimulate Indonesian exports of pulp and paper. For Vietnam, this means continued downward pressure on paper prices, but cheaper pulp imports. But Indonesian production is constrained by limits to wood and wastepaper supply. And the dramatic increase in the cost of imported inputs and the prospect of continuing social unrest may cause disruptions to Indonesian production.

Evaluating the project from the vantage point of the present day Vietnamese economy and global pulp and paper markets may be seen as unfair in some quarters. In particular, the designers of the project more than 20 years ago could not have foreseen the dramatic changes in the Vietnamese economy of the past decade following *doi moi* or the globalisation of the world economy through reduced barriers to goods and services trade, investment and capital flows. We give due recognition to this in our evaluation.

### Structure of report

In undertaking the research we have found a poor understanding of what has been achieved by the Bai Bang project against considerable odds. Our report is about these achievements (and failures) and the lessons that can be learned about development cooperation from the experience.



The components of our evaluation are shown in chart 1.5.

Two state owned enterprises, the Bai Bang Paper Company (BAPACO) and the Vinh Phu Paper Raw Materials Company (VPMC), currently have responsibility for the operations of the pulp and paper mill, and the procurement of logs for the mill respectively. These two companies are in turn members of, and responsible to, the Vietnam Paper Corporation (VPC or Vinapimex), a state owned general corporation responsible to the government for Vietnam's major pulp and paper mills. In chapter 2 we analyse the current performance of the mill. Our analysis covers:

- the financial performance of BAPACO;
- its structure, management and links to VPC; and
- the technical performance of the mill at each stage of the production line from wood and other raw materials intake through the mill yard and pulp mill, chemical plant, power and steam plant, and paper mill. We analyse the quality of two sample products – copy paper and exercise book paper. Our technical assessment highlights the critical production issues that need addressing if the mill is to have an assured long term future.

In chapter 3 we assess the performance of forestry operations – financial performance of VPMC, VPMC's structure, management and links to VPC, and plantation development. We also consider the contribution of the housing and transport side projects.

Economic activity is generated through the mill's purchase of logs and other materials, and through the payment of wages and profits, which are spent. In chapter 4 we analyse the contribution of this spending to the region and the national economy. We also look at how the income generated by the project is distributed between the different categories of workers in forestry and at the mill.

A strong feature of the project was its training and human resource capital building component. In chapter 5 we assess the project's contribution to human resource capacity building, both within the paper and raw materials companies and throughout Vietnamese society. Our assessment includes an evaluation of the impact of the so-called Scandinavian management model, introduced to Bai Bang by Swedish experts, on the managerial performance of the companies.

The project has brought about major changes in social and cultural conditions for men, women and children in the Bai Bang region since construction at the site began in the mid-1970s. These changes, which we address in chapter 6, are manifest in a variety of socioeconomic indicators as well as in the more difficult to measure aspects of social life such as cultural values, attitudes, tastes and ideas.

Each year the mill, forestry and associated activities deliver an array of financial and social benefits, and impose financial and social costs. A key issue in our evaluation is the net contribution of the project in a typical year. In chapter 7

we use a social cost–benefit framework to determine the net contribution.

Is the mill capable of remaining viable over the longer term? We address this question in chapter 8 with the help of a financial model of the mill’s operations. Our analysis covers the key factors that will shape longer term viability:

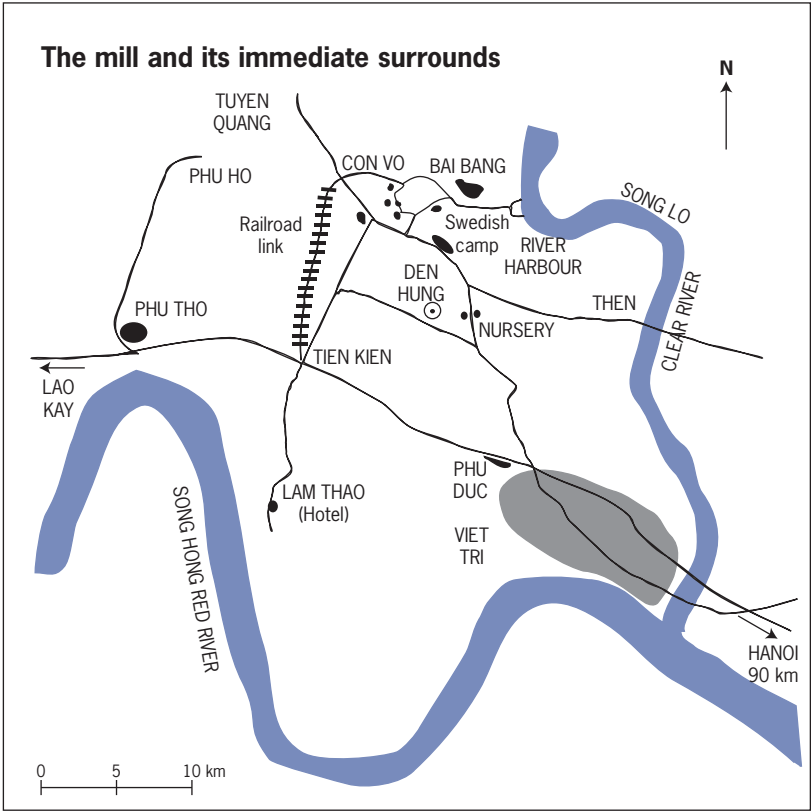
- global market developments – in particular, foreign currency prices for pulp and paper, and the exchange rate between the dong and the US dollar;
- changes in Vietnam’s trade policies under a move toward a more open economy with no quantitative restrictions or tariffs on imported paper;
- the scope for improving productivity through changed mill input–output relationships; and
- the ability of the mill to fund new investments that will improve its product quality and production level.

In chapter 9 we assess the extent to which the project achieved its overall objectives and the project’s achievements in relation to Sweden’s total financial contribution.

In chapter 10 we assess the relevance of the project against Vietnam’s current economic and social policy objectives. With the introduction in 1986 of *doi moi*, Vietnam’s wide ranging process of economic restructuring, profound changes in the institutional and policy environment for social and economic development are being put in place. We assess how the Bai Bang project contributes to, and is affected by, Vietnam’s economic and social policy objectives as the transition to a market economy unfolds. Key economic reforms impacting on the relevance of the Bai Bang project, and which we therefore consider in our assessment, are:

- trade and exchange rate reforms;
- government revenue and expenditure reforms;
- reforms to public administration and the legal system;
- land tenure reforms;
- financial sector reforms; and
- reforms to state owned enterprises.

Finally, in chapter 11 we identify the lessons that can be learned from the Bai Bang project as regards development cooperation and the fundamental conditions for sustainable development. Development cooperation projects are determined in the context of prevailing theories about development and prevailing knowledge about the social, political and economic circumstances in which they will be implemented. In addressing this task we take account of how theories of development and development cooperation have changed since the project was conceived and how Sida’s approach has also shifted over time.





# 2 How well is the mill performing today?

The mill is trading profitably and meeting its taxation obligations, though financial liquidity is low. New investment, substantial pulp imports and increased tariffs on imported paper have boosted production and profitability. Mill management structures and practices are distinctly superior to usual Vietnamese practice. But VPC seriously constrains BAPACO's financial independence, which is a potential threat to the mill's longer term viability. The mill is well maintained and operated, but technical performance is constrained by a shortage of steam. While mill performance is technically acceptable, it is not yet economically secure.

IN THE INCREASINGLY MARKET ORIENTED present day Vietnamese economy, the key measure of an activity's performance is its profitability. Profitability of the mill depends in turn on its technical performance, the way it is allowed to be managed by its owners (the Vietnamese government) and tariffs on imported paper. How profitable are mill operations? How well are they managed? How good is their technical performance?

## Mill operations: financial performance of BAPACO

The company maintains good financial records and accounts. These follow the Vietnamese Accounting System (VAS) for state owned enterprises in the manufacturing sector, which became effective in January 1996.

Recent financial performance is summarised in table 2.1 and chart 2.2. The detail is provided in appendix 2A.

Over the period 1990 to 1996 the mill achieved rapid growth in sales with net turnover (gross sales net of turnover tax) increasing by 500 per cent. Paper price increases accounted for 53 per cent of the increase, with the remaining 47 per cent due to sales volume growth and a change in the product mix toward higher value products.

## 2.1 Summary of key financial information for BAPACO 1990–96

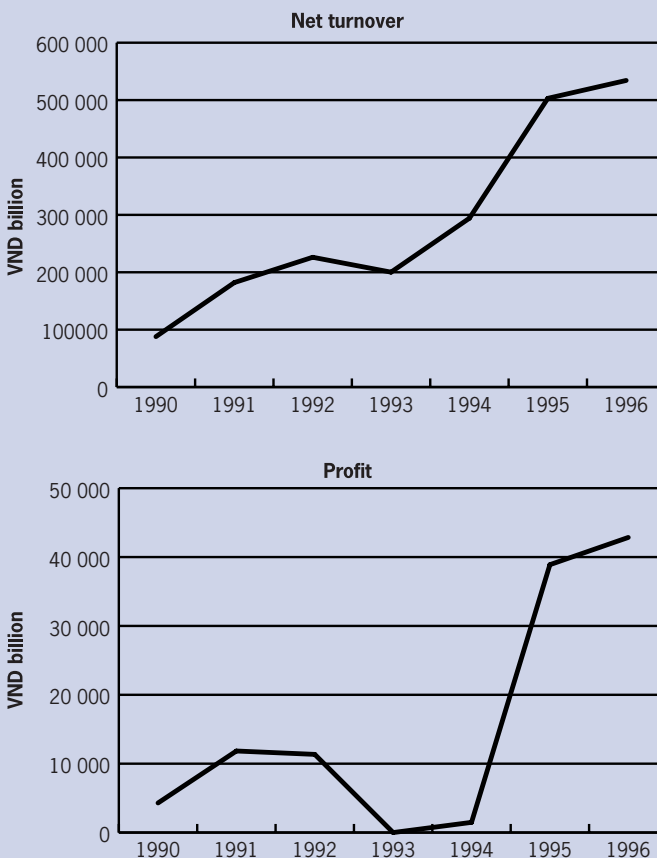
		1990	1991	1992	1993	1994	1995	1996
Net turnover <sup>a</sup>	VND million	87 852	182 006	226 145	200 192	294 184	503 047	534 208
Cost of goods sold	VND million	80 112	163 452	203 337	190 465	285 100	453 111	435 508
Gross margin <sup>b</sup>	%	9	10	10	5	3	10	18
Fixed assets (NBV)	VND million	175 107	316 570	295 268	292 153	274 741	220 530	197 230
Inventories (stocks)	VND million	108 116	215 278	206 043	229 509	232 040	325 704	369 150
Trade debtors <sup>c</sup>	VND million	2 196	5 375	17 294	3 653	2 072	44 544	3 746
Current assets	VND million	134 950	263 011	265 836	267 322	247 382	404 346	405 193
Current liabilities	VND million	12 787	19 639	42 902	62 232	32 415	82 106	93 308
Working capital	VND million	122 163	243 372	222 934	205 090	214 967	322 240	311 885
Capital	VND million	297 270	559 942	518 202	497 243	489 708	542 770	509 116
Profit before tax	VND million	4 295	11 841	11 350	–	1 480	38 894	42 849
Taxation charge	VND million	2 032	4 737	4 540	–	518	13 613	14 997
Profit tax rate <sup>d</sup>	%	47	40	40		35	35	35

<sup>a</sup> Value of sales less turnover tax. <sup>b</sup> Net turnover less cost of goods sold as a percentage of net turnover.

<sup>c</sup> Money owing from sales of paper. <sup>d</sup> Taxation charge as a percentage of profit before tax.

Source: Derived from BAPACO financial statements.

## 2.2 Growth in Bai Bang mill turnover and profits



Data source: Table 2.1

All BAPACO's paper sales are to the domestic market. There are two reasons for this. The domestic market for paper is larger than Vietnam's paper production – by around 70 000 tonnes per year. Hence, there is no need to export. And Vietnam's paper is not particularly competitive on export markets. Reductions in production costs and improvements in paper quality are needed for this to occur.

Profits have grown strongly in recent years to reach VND42.8 billion in 1996. Profit increased from 9 per cent to 18 per cent of total sales between 1990 and 1996. By contrast, Vietnam's two other large mills, Tan Mai and Dong Mai, both recorded losses in 1996.

The sales and profit performance of the company has been assisted by a strong demand for paper, a tariff on imported paper (which was raised from 20 per cent to 40 per cent in 1996) and controls over import volumes from time to time through quotas.

Current assets in 1996 were VND405 billion compared with current liabilities of VND93.3 billion.

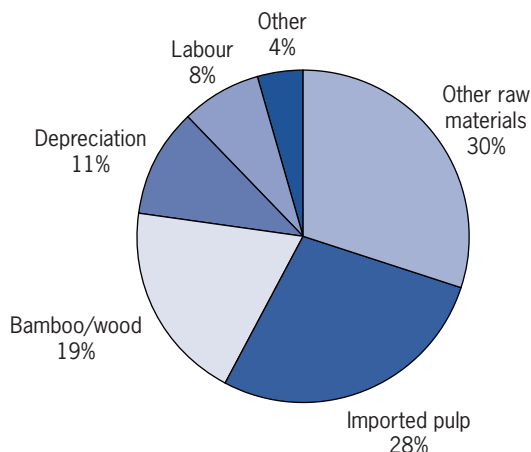
### Operating costs

These are summarised in chart 2.3.

Most materials are supplied locally. For example, coal is supplied by the Vietnam Coal Corporation, petroleum products are supplied by the Vinh Phu Petrol Company, and bamboo and logs are supplied through VPMC.

Pulp is imported mainly from Indonesia and Thailand, and incurs an import duty of 1 per cent. The Phu Tho General Trade Company procures pulp, chemicals and other materials for the mill. Spare parts are procured from a

**2.3 Components of mill operating costs 1996**



Source: BAPACO financial statements.

range of sources, including Sweden, Thailand and Japan. Import duties on spare parts range from 0 to 30 per cent.

Labour costs (salaries, social insurance and health insurance contributions) account for only 7.7 per cent of production costs.

The depreciation charge (10.8 per cent of production costs) has shown a significant variation from year to year due to changes in the rates applied by the Ministry of Finance to the book value of assets. In poor trading years the company is allowed to pay less than the nominated depreciation rate, with charges above the nominated rate recouped in good trading years. This helps even out the profit stream from year to year. In 1996 the depreciation charge was 120 per cent of the standard rate. (Standard treatment is depreciation calculated on a straight line basis with rates of 4–7 per cent (buildings), 7–18 per cent (machinery), 5–15 per cent (transportation) and 6–10 per cent (office equipment).) Since 1995 depreciation has been retained within VPC for reinvestment by member companies. Before that, depreciation was paid to the national budget.

Other expenses accounted for 4.2 per cent of production costs in 1996. These include:

- interest on loans;
- a capital tax for the use of government capital (set at 4.8 per cent of the capital stock value excluding capital financed by the company through retained earnings);
- administration expenses; and
- insurance costs.

### Fixed assets

Table 2.4 summarises the fixed assets of the company as at end-December 1996. These are dominated by machinery, buildings and transport equipment.

Other assets include those for staff benefits (nursery, kindergarten), assets to be disposed (mainly antennae brought in by Sweden to serve Swedish telecommunication needs during the construction phase) and assets of the technical training college, which has recently been transferred to VPC.

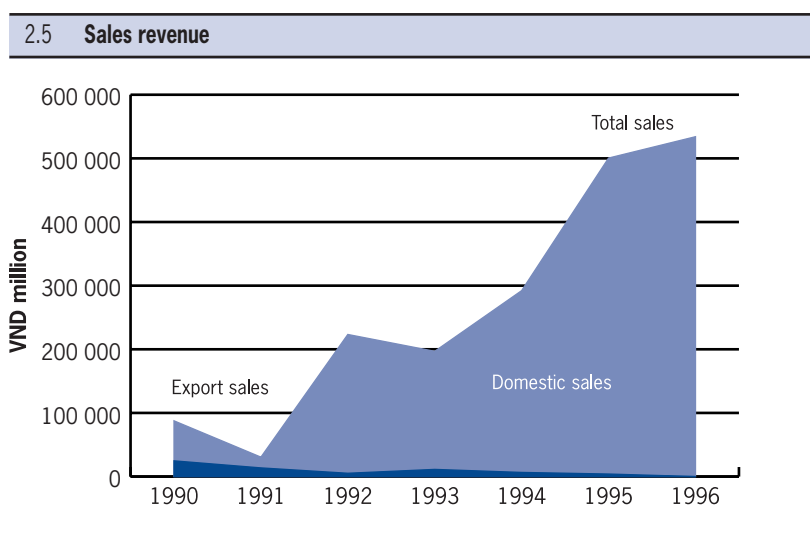
2.4 Fixed assets at cost and depreciated value 1996			
	Cost	Accumulated depreciation	Net book value
	VND million	VND million	VND million
Buildings	105 503	48 172	57 331
Machinery	381 057	272 802	108 255
Office equipment	4 997	4 491	506
Transport equipment	45 514	28 703	16 811
Other assets	18 873	9 570	9 303
<b>Total</b>	<b>555 944</b>	<b>363 738</b>	<b>192 206</b>

Source: Estimates provided by company officials.

Assets were revalued upwards in 1991 as part of a restructuring of all state owned enterprises. Some office equipment and machinery are quite old and will need replacement in the future. As the company is short of cash, new investment will require new capital or loans. Such investment will require approval from VPC and the Ministry of Finance.

## Revenue

The company's revenue stream is shown in chart 2.5. Sales of paper products accounted for 98 per cent of total sales in 1996, all to the domestic market. The remaining 2 per cent of sales is represented by sales of electricity, chemicals produced, hotel services and transportation services, which were in excess of the needs of the company.



Data source: BAPACO financial statements.

Key contributing factors behind the rapid growth in paper sales in recent years are:

- new investment in early 1995 allowing paper machines to increase revolutions from 300–400 metres per minute to 500 metres per minute;
- substantial imports of pulp, which has allowed increased production volume of paper and product quality; and
- an increase in the tariff on imported paper from 20 per cent to 40 per cent in 1996 and a temporary ban on imported writing paper applied in the second quarter of 1996.

The 1996 production mix and average selling prices are shown in table 2.6.

## 2.6 Production mix and prices 1996

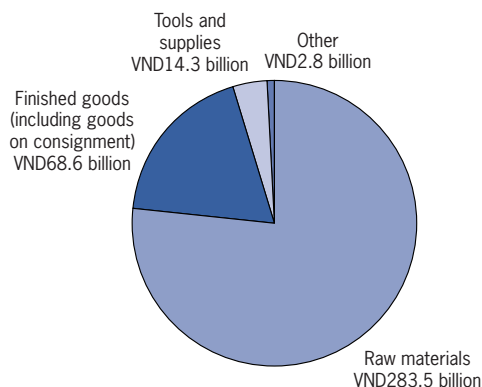
	<b>Weight</b>	<b>Average price</b>
	Tonnes	VND million/tonne
Total reels (sold to paper converters and publishers)	55 164	10.01
Reams	2 371	10.30
Lined pads	194	} 10.92
Exercise books	514	
Telex paper		11.50

Source: Company records.

## Inventories (stocks)

The company maintains large inventories (VND369 billion in 1996). About 77 per cent of these are raw materials (wood and bamboo, pulp, chemicals, fuel, spare parts) and nearly 20 per cent finished goods (chart 2.7). Raw materials stocks are sufficient for three months of production. Stocks of finished paper relative to sales were also high in 1996 (about two month's sales). Inventories can be difficult to convert into cash at short notice. Because of its large share of current assets held in inventories, the company's liquidity is low.

## 2.7 Inventories December 1996



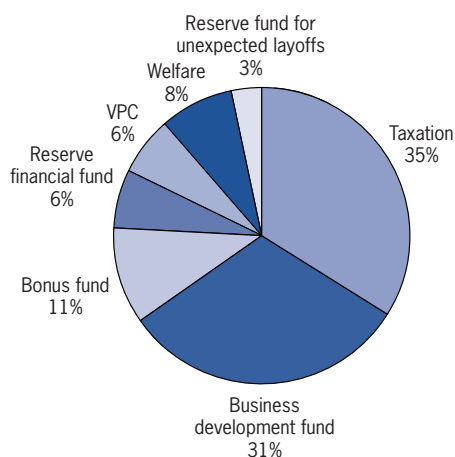
Data source: BAPACO financial statements

## Allocation of profits

Profit after tax is appropriated to various funds for specified purposes as follows (chart 2.8).

- Fifty per cent to the business development fund – to fund small fixed asset investments. Increases in capital through the fund are not subject to capital tax.
- Ten per cent to the reserve financial fund.
- Five per cent to the reserve fund to help fund unexpected layoffs of workers.

## 2.8 Allocation of company profits 1996



Data source: Discussions with company officials and financial accounts.

- Two thirds of the remaining 25 per cent to the bonus fund (to pay worker bonuses).
- One third of the remaining 25 per cent to the welfare fund – spent on social activities, subsidies to employees in need and for the construction of community facilities such as the swimming pool, club and sports stadium, and social infrastructure such as roads and health.
- Ten per cent to VPC.

Apart from the 10 per cent contribution to VPC, all other funds remain under the control of BAPACO's board of management.

A consequence of this predetermined allocation of profits to the various funds is that only half the company's profits are available to it to fund new investments.

### Return on capital

The accounts show total capital for the company of VND509.1 billion for 1996. About 93 per cent of this is capital from government (mill capital transferred by Sweden) and capital transferred from retained earnings. The remainder is listed as business development funds, and bonus and welfare funds. In 1996 the return on capital was 5.5 per cent.

### Wages, employment and value added per employee

Employee wages are heavily oriented toward worker performance – which is not a common practice in other companies. Wages consist of two components:

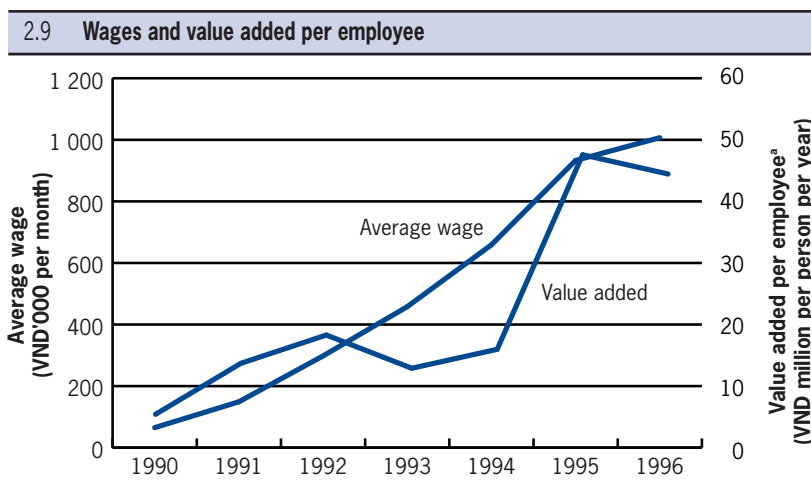
- basic salary – calculated as a multiple of the minimum salary level of VND114 000 per month where the multiple takes into account seniority, education, professionalism, fluency in foreign languages, etc., length of service and job title; and
- additional salary – paid monthly and based on company sales.

Wages are paid twice monthly. They are topped up from payments from the bonus fund.

Average wages have grown rapidly in recent years (chart 2.9) to exceed VND1 million per month by 1996. This is about double the average wage level in the state owned enterprise sector. When combined with the excellent living conditions, health and social amenities provided by the company, this yields an even higher social wage. Because of their much greater productivity, Bai Bang mill workers earn considerably more than workers in other state owned paper mills.

Value added per employee (which measures the income generated through the company’s employment of labour and capital) has climbed rapidly in recent years (chart 2.9). This increased income has been shared between wage payments to workers and profits to mill capital.

The number of employees has been reasonably stable since 1990 at around 2800. Most are permanent workers with about 1 per cent being temporary. Temporary employees work mainly on simple production tasks such as wrapping, packing, lining and cutting paper for short periods. The number of temporary workers rose sharply in 1997 and 1998 to number about 400.



\* Profit before tax plus labour costs plus depreciation divided by the number of employees.  
 Data source: Derived from company records.

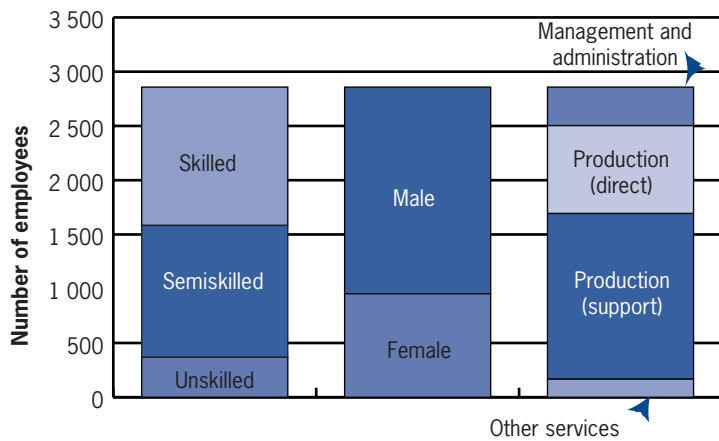
About one third of the workforce are female. As shown in chart 2.10, about 45 per cent of the workforce in 1996 were classified as skilled, 42 per cent semiskilled and 13 per cent unskilled. The number of skilled workers increased





*The average wage level at Bai Bang is about double the average wage level in the state owned enterprise sector which is a reflection of higher labour productivity. Photo A. Berlin*

**2.10 Composition of BAPACO workforce by skill level, gender and type of activity 1996**



Data source: Company records.

by 20 per cent between 1990 and 1996, while unskilled workers decreased by 19 per cent.

The mill runs three, eight hour working shifts per day with about 1200 to 1300 workers involved in shift work. Workers on the late night shift (11.00 pm to 7.00 am) receive an additional allowance of 40 per cent of salary.

## How viable is BAPACO in the short term?

Pulp and paper mills are highly capital intensive. The cost of capital can amount to up to 40 per cent of the total cost of production. The Bai Bang mill received its fixed capital in the form of non-returnable development aid from Sweden. It therefore does not have to earn a commercial return on this capital either in the short or the longer term. (In fact, calculations in Bai Bang project planning documents of the early 1970s indicate that the economics of the mill were such that it could not generate a commercial rate of return on the mill capital stock.) To remain viable in the short term the mill must generate sufficient revenue to cover its production costs, meet the various taxation obligations of the authorities such as turnover tax and capital tax, and maintain its plant and equipment in good working order.

But this will not guarantee viability over the longer term. For pulp and paper mills to achieve longer term viability they need to engage in a more or less continuous program of equipment renewal to improve product quality. The company will need to generate sufficient profits after tax to fund this renewal, either through its retained earnings or through borrowings.

The 1996 accounts show that BAPACO had current assets of VND405 billion, 91 per cent of which were stocks. Its current liabilities were VND93 billion, 70 per cent of which were loans from government banks. These loans are repayable within six months and bear interest at a rate of 1.5 per cent per month. The company does not have sufficient cash to repay these loans, which are likely to be rolled over into the future.

The high ratio of current assets to current liabilities (current ratio of 4 compared with a typical current ratio of 2) indicates that the company is financing its current assets out of its own capital. But, as indicated by the high ratio of stocks in current assets, the company has low liquidity and cannot convert its current assets quickly into cash. It does not have cash to invest in fixed assets. The company could become much more liquid if it were to reduce its stocks of materials and finished product.

The mill is trading profitably in the short term and meeting its financial obligations. Given the structure within which it operates, there is no need for the mill to maintain a high level of liquidity. However, because of the controls VPC exerts over its sales, purchases of raw material, retention of depreciation and financing of new investment (discussed later), BAPACO cannot be considered to operate as an independent financial entity.

2.11 Taxation paid by BAPACO							
	1990	1991	1992	1993	1994	1995	1996
	VND	VND	VND	VND	VND	VND	VND
	million	million	million	million	million	million	million
<b>Taxation</b>							
Turnover tax	3 201	6 457	8 494	7 396	9 078	9 931	10 611
Profits tax	2 032	4 737	4 540	-	518	13 613	14 997
Tax on capital	-	12 364	23 791	21 623	21 068	20 978	21 486
Housing taxes	-	-	-	-	126	90	101
Land tax (rent)	-	70	280	421	434	630	1 750
Personal income tax	-	-	-	-	-	-	43
Other taxes	-	-	-	-	3	296	1
Depreciation fund	3 523	10 199	28 469	20 091	20 004	6 687	-
Aid fund return to state budget	3 738	12 789	11 946	-	-	-	500
<b>Social security and trade union fees</b>							
Social insurance	275	350	526	1 025	1 566	1 373	1 466
Health insurance	-	-	-	681	339	605	644
Trade union fees	36	77	122	194	168	183	195

Source: BAPACO financial accounts.

## Contribution to government revenue

The company contributed about VND50 billion in 1996 to government revenue through a range of taxes (table 2.11).

- Turnover tax (2 per cent of turnover of paper products) is paid monthly.
- Profit tax of 35 per cent of estimated profits is paid monthly.
- Capital tax of 4.8 per cent of the capital granted state owned enterprises is paid monthly.
- Housing tax (collected from workers who stay in company staff housing) is charged at 60 per cent of the rent collection and paid to the tax authorities.
- Personal income tax is paid annually on actual average monthly income. Income tax is 10 per cent for monthly incomes (excluding bonuses) between VND1.2 million and VND2 million, and 20 per cent for monthly incomes exceeding VND2 million. Salaries for most workers fall below the level that incurs income tax.
- Land tax is 0.5 per cent of the notional land value.
- While the depreciation charge has, since 1995, been allowed to remain at the company for reinvestment purposes, the depreciation fund is effectively controlled by VPC, which determines and controls the investment plans of each of its mills. Depreciation funds paid by Bai Bang could be transferred to other companies as part of VPC's internal capital requirements.
- Aid funds are those received by the Bai Bang mill from the Swedish government in the form of stock or assets. They are paid back to the state budget when used or sold.

- Other taxes consist of license tax, tax on obsolete stock and tax on selling houses.
- In addition to the above taxes the company also collects for the authorities social insurance, health insurance and trade union fees.

All taxes and obligations are paid to the local tax authorities. They are then transferred to the central government treasury. Provincial–central government revenue sharing arrangements exist for some taxes such as turnover tax.

## Customers

The company has a list of more than 160 customers. They include stationery enterprises and publishing companies. Sales to five major customers accounted for 71 per cent of sales in 1996 (table 2.12) of which 75 per cent was in Hanoi and 25 per cent in Ho Chi Minh City. The remaining 21 per cent of sales were made to a large number of smaller customers. The major customer is VPC, which acts as the company’s agent. The company does not have the right to open agencies for selling its rolled paper. However, it can open agencies anywhere in Vietnam (other than Hanoi to avoid competition with VPC’s shop in Hanoi) to sell its processed paper (notebooks), which is only about 10 per cent of the total value of its produced paper.

2.12 Major customers 1996		
Customer	Volume sold Tonnes	Value VND million
<b>Hanoi</b>		
VPC	20 843	209 868
Stationery Centre	4 649	45 559
Stationery Enterprise	2 951	29 370
<b>Ho Chi Minh City</b>		
Branch of VPC	6 828	68 111
Bao Hang (private company)	2 532	25 306

Source: BAPACO financial accounts.

### What do customers think of Bai Bang paper?

To answer this we conducted a survey of the heads of departments of planning and material procurement in six printing houses using Bai Bang paper. Firms interviewed had more than 150 employees, annual revenue between VND7 billion and VND90 billion, and paper consumption of at least 150 tonnes per year with four firms consuming more than 4000 tonnes per year. They included some of the biggest printing houses in Hanoi.

Interviewees were first asked to rate the quality of Bai Bang paper on a scale of 6 (excellent) to 1 (poor). Results indicated a favourable view, with quality rating scores as follows.

- Whiteness: 4.9
- Smoothness: 4.9
- Thickness: 4.4
- Absorbency: 5.1
- Price in relation to quality: 4.6
- General evaluation: 4.9

Some interviewees indicated that whiteness and thickness varied from time to time and, given the quality, the price is still high relative to imported paper.

When asked why the company decided to buy Bai Bang paper, interviewees rated most highly its reliability of supply, its satisfactory quality and its price advantage over imported paper. Bai Bang paper was considered popular and available at any time and place.

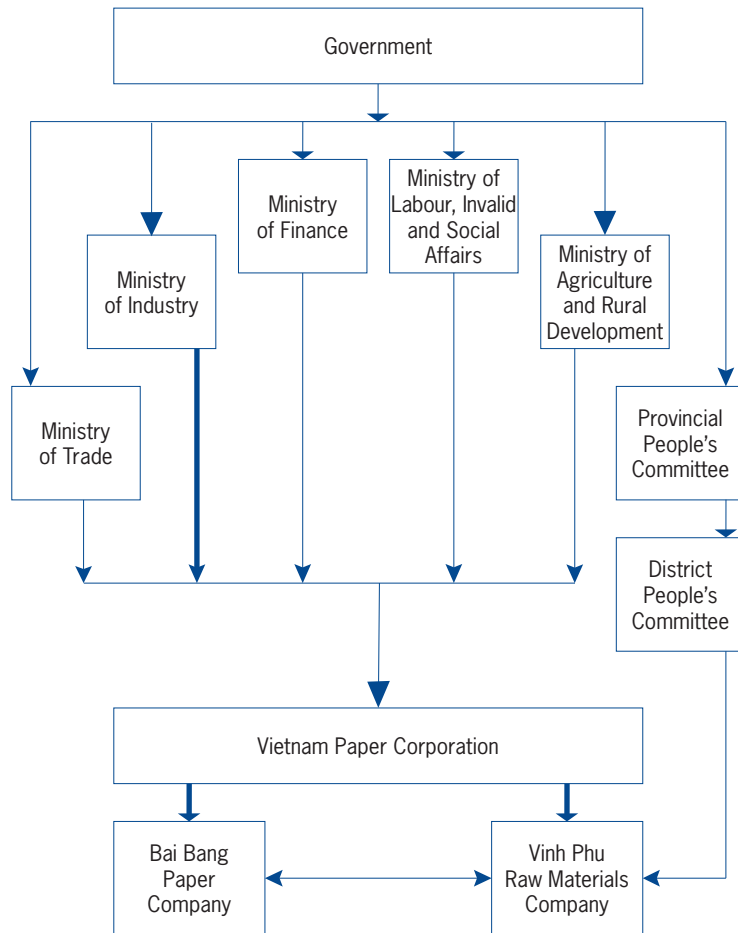
When asked about whether they would continue to buy Bai Bang paper if the price were to increase by 30 to 40 per cent relative to the price of imports (which could occur if tariffs on imported paper were suddenly removed and if the productivity of paper production at Bai Bang did not increase), all interviewees said no.

## BAPACO management structures, decision processes and interaction with authorities

Both BAPACO and VPMC are member companies of Vietnam Paper Corporation (VPC or Vinapimex). VPC was formed in 1995 through an amalgamation of state owned enterprises. It is one of 18 so-called general corporations in Vietnam. The official motivation for the formation of general corporations was to strengthen their capacity to compete against imports and to protect production of strategic goods. BAPACO and VPMC report through VPC to the government through the Ministry of Industry. The companies must also report through VPC on financial issues quarterly to the Ministry of Finance, personnel issues six monthly to the Ministry of Planning and Investment, planning and plan realisation six monthly to the Ministry of Planning and Investment, statistical data to the General Statistical Office, and import and export plans to the Ministry of Trade (chart 2.13). VPMC must also report through VPC to the Ministry of Agriculture and Rural Development on forestry issues such as plantation development, silviculture and obtaining logging permission. Both companies have close relationships with the Phong Chau District People's Committee, and with the provincial People's Committee. They must pay tax to provincial authorities and obey local administrative rules.

VPC controls nine pulp and paper mills including Bai Bang and the other two large mills of Tan Mai and Dong Nai – a production capacity of 154 000 tonnes of paper and 143 000 tonnes of pulp. It also controls two raw material

## 2.13 Accountabilities of BAPACO and VPMC



companies including VPMC, the technical vocational school and an institute of paper, plywood and stationery factories and a financial company.

We undertook an analysis of how BAPACO and VPMC interact with VPC and the government, and the management structures and decision making processes in each company. Our findings are documented in appendixes 2B (BAPACO) and 3B (VPMC).

### VPC's activities constrain mill performance

VPC seriously constrains BAPACO from operating as an independent profit maximising business. VPC uses BAPACO profits to cross subsidise the operations of Bai Bang's domestic competitors and 'manages' competition between them. VPC controls the price of logs supplied by VPMC, prices charged for BAPACO paper, and how and where BAPACO can sell its paper.

Prices are not always adjusted fully to reflect movements in world paper prices. There is an element of social pricing – to ensure affordability of products to categories of domestic consumers. Exports and imports must be approved by VPC. Decisions on developing new products also need VPC approval. These decisions may not be in BAPACO's best interests as VPC must also take care of its other member companies. In return, the mill receives a degree of protection against imports and has access to subsidised funds for capital investment.

In general, mill managers believe this to be an unsatisfactory deal. They would prefer to 'go it alone' as an independent financial enterprise with full control over production, pricing and distribution.

Our analysis in chapter 8 suggests that BAPACO has the strength to operate independently using its own profits and access to credit at market rates to fund new investment. We cannot find any economic logic for VPC. In our view, VPC's power and current activities represent a significant threat, perhaps the greatest threat, to the longer term viability of BAPACO.

### Organisational structure of BAPACO

BAPACO is run by a board of directors comprising a general director and four vice-directors. These people are collectively responsible for 25 units of activity covering operations, maintenance, economics and investment. The structure is hierarchical and cumbersome. A management board, which includes the board of directors plus the personnel manager and financial manager, decides main issues involving personnel and large financial decisions.

#### **Rewards and sanctions**

Employees are rewarded through salaries, bonus payments, welfare benefits and promotion. Promotion is an appealing incentive bringing with it higher status, power and salary. Salaries have a performance element and the bonus fund is allocated according to the rated performance of each unit. The welfare fund is distributed according to the wishes of employees and the labour union. In recent years BAPACO has spent heavily on employee (and employee family) amenities including a swimming pool, club and VND6 billion sports centre, which was completed in time for the 15 year anniversary celebrations in November 1997.

Sanctions are difficult to apply in practice unless rules are violated. Dismissals for poor performance are difficult to apply. Transfer to other positions is the feasible outcome.

#### **Decision making processes**

The model is one of a group (usual Vietnamese practice) rather than individual decision making. But decision making processes in BAPACO are faster than in many state companies. Horizontal communication is encouraged and works well. Because of clear job descriptions and clear responsibilities, people understand who must make what decisions. And there is a tendency to delegate more to middle and line managers.

On personnel matters, VPC can assign or demote the general director who in turn can make recommendations on vice-directors to VPC. The personnel department makes suggestions on unit heads to the general director and Communist Party steering committee taking into account the opinions of the board of directors. In practice, the general director's decisions never conflict with the party steering committee's opinions.

The company often has pressure applied to accept workers who are relatives of powerful people or its current or former employees. Because of this and pressure from local authorities to create more jobs, it hires many more workers than it needs. This reduces productivity.

The company has autonomy on spending for its day-to-day operations in its annual plan, spending its bonus fund and welfare fund, and spending on advertising. It must get approval from VPC for new investments and asset disposal. And it must transfer all its depreciation to VPC and seek VPC's permission to draw on it. VPC may also approve additional investment funds for BAPACO from the depreciation and business development funds of other companies in VPC and vice versa.

### **Comparisons with usual Vietnamese practice**

Management structures and processes at BAPACO reflect the influence of the so-called Scandinavian management model implemented and taught by the Swedish experts up until their departure in 1990. This model is essentially conventional Western style management principles with a Scandinavian flavour of equity and caring. Its label as Scandinavian reflects that the Vietnamese were first exposed to it through the Sida project. As a result, these structures and processes differ from usual Vietnamese practice in a number of respects.

- The company has clear goals, which are well communicated to its employees. This is often not the case in other Vietnamese companies.
- There are clear responsibilities and accountabilities in the organisational structure with each person having only one supervisor. By contrast, many Vietnamese companies do not have clear job descriptions and responsibilities.
- There is a stronger focus on productivity and profitability.
- Delegation of decision making is more widely practiced and workers are encouraged to find their own solutions to problems rather than going to supervisors.
- Information sharing through bottom up and horizontal communication is more widely practiced.
- There is a more participative approach to management demonstrated in the way employees are involved in the allocation of the welfare fund.
- There is a strong emphasis on punctuality in the workplace in contrast to the situation in many other state owned companies where workers often talk of 'rubber time'.





*The so-called Scandinavian management model was implemented and taught by the Swedish experts up until their departure in 1990. Photo WP-systems archive.*

- The company takes better care of employee welfare than usual Vietnamese practice – examples being the sports stadium and club for its employees and health care provisions for employees and their families.
- There is more and better internal analysis and monitoring of financial performance.
- The company uses more systematic and professional planning procedures, and data recording and retrieval systems with more attention given to the value of time in making financial decisions.

All managers interviewed said that the management principles they had learned from Swedish experts could not be effectively applied until the economic reforms began. Under the planned economy era, management had to wait on decisions from government. But, with the transition to a market economy, managers had an opportunity to apply what they had learned. The content of the Scandinavian management model is addressed in chapter 5.

## How good is the mill's technical performance?

To answer this we undertook an evaluation of how well each part of the mill was performing. Our evaluation, which is presented in appendix 2C, also contains a series of recommendations for improving the mill's technical performance and international competitiveness.

Although in production since 1982, Bai Bang is not an old mill. There are many much older mills that still compete in the marketplace. If the mill carries out a continual program of investment renewal, its working life could extend for up to another 50 years.

Several mill design aspects are unusual.

- It is unusual that a mill constructed in the late 1970s would be only 55 000 tonnes in capacity – uncertainties about fibre availability at the time being a major reason for this.
- There is a curious mix of simple and complex equipment in the production line – for example, a 1930s design bleach sequence and two sophisticated twin wire paper machines.
- The mill was designed to operate in a closed economy supplying a simple product – school exercise books of low brightness. But, with pulp production constrained to 48 000 tonnes, pulp imports must have always been envisaged to reach paper design capacity of 55 000 tonnes. And, with economic liberalisation in the 1990s, the mill has had to adjust to produce products capable of withstanding import competition.

Paper production climbed from 11 000 tonnes in 1982 to 30 000 tonnes by 1990. Production climbed rapidly after 1994 (chart 2.14), assisted by new investment, operational changes that increased paper machine speed by 50 per cent and pulp cooking from 14 up to 19 cooks per day, and imports of pulp.

### Pulp mill

The mill is being operated and maintained reasonably well. Chip size after screening is highly variable and losses between the blow line and bleached storage are high. The quality of purchased chips is also highly variable and reduces pulp quality.

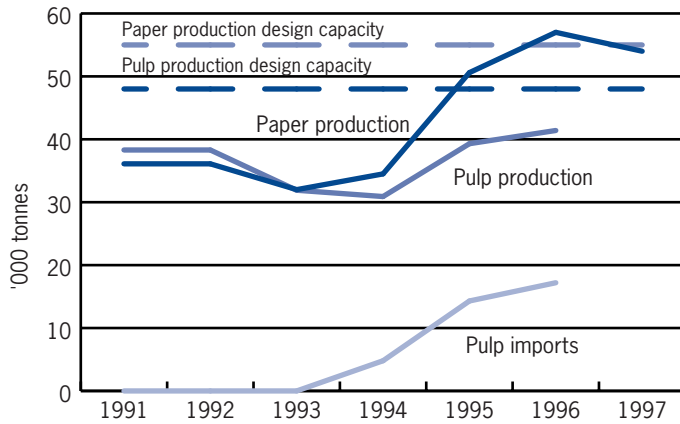
Because of high losses in digester time, output has failed to reach design capacity. Shortage of steam is the main factor in lost digester time (chart 2.15).

The mill is required by the local authorities to meet tough emission standards.

### Chemical plant

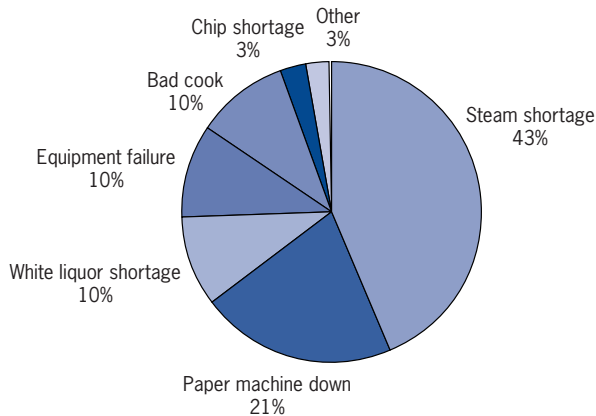
The plant is clean and functions well. Plant design rate is 7 000 tonnes per year of chlorine, but the mill uses only 5 000 tonnes. The difference is sold on the open market, earning about VND2 billion annually.

### 2.14 Mill paper production, pulp production and pulp imports



Data source: BAPACO records.

### 2.15 Factors contributing to lost digester time per calendar day



Data source: Pulp mill records.

### Maintenance department

Numbers employed are large (555, of which 436 are tradespeople and 119 are in day labour operations). Groups are designated for each mill area. The spare parts system set up by the Swedes is regarded as being 'still possibly the best in Vietnam', though the high diversity of foreign suppliers used initially creates problems in sourcing parts.

The power boiler is the biggest single problem that needs attention. Erosion of tubes in this boiler is a significant issue. The recovery boiler is unable to supply sufficient steam on its own to enable the fibre line to continue operating.

Trades people are trained at the vocational training school. Workers initially came from poor farms and lacked a machinery culture. But this is now changing as second generation family members are starting to work at the mill.

### Power and steam plant

There is one coal-fired power boiler and a recovery boiler. The plant is in need of a higher level of maintenance than it receives. The whole mill runs or stops according to the performance of the power boiler. The recovery boiler steam capacity is too little to enable mill operation on its own. Coal-fired boilers require continued maintenance and the installation of only one boiler is considered a major design fault.

### Paper mill

To improve paper quality a range of new initiatives were recently introduced. Some, such as the change to alkaline sizing, the new calendar, sizing press and on-machine quality measuring system, were not yet working properly at the end of 1997 but are all worthwhile investments.

Refining of pulp fibres is the bottleneck in the paper mill. Machine rolls are adequate at present machine speeds, though a change in the press section would reduce paper breaks.

### Product quality

The mill makes 16 basis weights of paper in the range 52 to 120gsm. The four most common weights are 52, 58, 60 and 70gsm. Recent changes in technology such as the move to alkaline sizing, the new calendar and measurement of basis weight, moisture, ash and caliper on machine were introduced to address specific quality complaints from the market.

The local market's perception of quality is changing. Starch is used on exercise book paper for the school market in southern Vietnam, but is not demanded in the north. Schools in Hanoi are now asking for coated paper covers on exercise books and higher brightness is in increased demand.

The mill cuts to standard sizes. Reels are sold to merchants for cutting to odd sizes. Cutters work to order. The mill makes paper to order and produces paper for general sale.

We analysed and tested two qualities of Bai Bang paper, copy paper of nominally 60gsm and exercise book paper, against Australian standards. Bai Bang's copy paper was slightly bulkier, weaker, lower opacity, of lower tensile strength and rougher. The formation was also highly non-square. Bai Bang exercise book quality paper was bulkier (a positive quality parameter), not as square, had lower tensile strength, lower brightness and was rougher.



*Managers stated that the management principles they had learned from the Swedish experts could not be effectively applied until the economic reform program began. Photo © Heldur Netocny/PHOENIX.*

## 2.16 High priority technical improvement issues for consideration

Area	Issues
Wood supply	<ul style="list-style-type: none"> <li>• Maximum 20 per cent bamboo.</li> </ul>
Wood yard	<ul style="list-style-type: none"> <li>• Improve chip screening. Rechip oversize.</li> </ul>
Pulp mill	<ul style="list-style-type: none"> <li>• Extend cook time to obtain kappa 18.</li> <li>• Accurately measure yield loss after digester.</li> <li>• Install knot drainer, recook knots, shut knot refiner.</li> <li>• Aim Cl<sub>2</sub> residual to be 0.1 per cent.</li> <li>• Install D stage C Ep D H.</li> </ul>
Paper mill	<ul style="list-style-type: none"> <li>• Install wet lap machine (or larger bleached pulp storage tower).</li> <li>• Maximum 30 per cent of imported pulp to be softwood.</li> <li>• Ensure ABB QCS operates and use to improve CD profile.</li> <li>• Use size presses. Consider changing to applicator type (for example, Symsizer).</li> <li>• Aim for total broke return (including wet-end, dry-end and finishing room return paper) to be less than 15 per cent.</li> <li>• Overhaul rewinder (replace if necessary) to be able to consistently cut narrow width reels.</li> <li>• Rearrange piping and chests to make refining system more flexible.</li> <li>• Exploit newly installed alkaline sizing system to make more copy and offset printing paper.</li> </ul>
Finishing	<ul style="list-style-type: none"> <li>• Use full width reels on A4–A3 sheeter.</li> <li>• Recalculate price differentials between sheets and reels.</li> <li>• Consider improving efficiency of exercise book machine.</li> </ul>
Chemical plant	<ul style="list-style-type: none"> <li>• Install integrated chlorate–ClO<sub>2</sub> plant.</li> </ul>
Power and steam	<ul style="list-style-type: none"> <li>• Install second coal-fired boiler.</li> <li>• Calculate advantage of shutting the direct contact evaporator and using only indirect evaporation.</li> </ul>
Marketing	<ul style="list-style-type: none"> <li>• Evaluate future need to use the condensing turbine.</li> <li>• Explore all avenues for reducing the demand for narrow width reels or justify the cost of necessary equipment upgrades to enable efficient supply by Bai Bang.</li> </ul>
Maintenance	<ul style="list-style-type: none"> <li>• Consider using ream and reel wrapping as sales devices.</li> <li>• Continue effort to have maintenance tradespeople identify with production departments.</li> <li>• 'Satellite' maintenance areas.</li> </ul>

Source: Technical evaluation (appendix 2C).

### Technical improvements that should be made

While the mill's performance is technically acceptable, it is not yet economically secure. It needs to be able to reduce its operating costs by between 10 and 15 per cent to be confident of withstanding import competition without tariff protection. The two most critical issues that need addressing to achieve this involve:

- installation of a second power boiler; and
- upgrading of paper quality to satisfy changing market requirements.

A summary of high priority improvements that the mill should consider to improve both its technical performance and international competitiveness is set out in table 2.16.

### How can Bai Bang compete in the global market?

The world's paper requirements are supplied by three categories of mills:

- international;
- national; and
- specialty.

International mills are large (over 300 000 tonnes per year), export-oriented, modern or recently modernised integrated pulp and paper mills producing a few standard grades of paper. Fixed costs are a very high proportion of total costs. Paper is often priced on a variable cost basis as it is essential for these mills to keep their machines fully loaded.

National mills are smaller, domestic-oriented and lack the size and cost-efficiency to export. They tend to be older and make a wider range of grades and grammages. They are close to the requirements of their domestic customers. The more competitive are integrated with pulp mills.

Specialty mills are smaller, usually older still, nonintegrated and with many machines. They make a wide range of grades, often with a wide range of finishing options. Production costs and prices are high.

Bai Bang is a national mill. To compete in the global market it must focus on:

- quality;
- service; and
- price.

Bai Bang needs to exploit its 'closeness to market' competitive advantage by offering rapid reliable supply of predictable, 'fit for purpose' paper. Technical advice on how best to use and handle paper, prompt response to complaints and offering tailor made quality to domestic customers are ways in which Bai Bang can withstand import competition.

Being competitive in quality and service can permit a national mill to charge somewhat more than the imported price. This situation is evident at Bai Bang. In 1996 imported paper of equivalent quality to Bai Bang was selling in the Hanoi market at a price about 10 per cent below the price of Bai Bang paper. In early 1998 the landed duty free price of comparable but higher quality paper from Indonesia was VND8.6 million per tonne. The ex-factory price from BAPACO was around VND9 million per tonne. BAPACO's selling price in Hanoi was VND10 million per tonne and VND10.6 million per tonne in Ho Chi Minh City. While BAPACO's prices seem competitive, the company often has problems meeting the financing terms offered by foreign competitors.

For example, in the lead up to the ban on imports in 1997 purchasers were getting three months and longer credit terms.

### How does Bai Bang measure up?

The key requirements for a successful mill in the global paper market are:

- sufficient raw material available at the mill at a reasonable cost;
- year round fresh water availability in sufficient quantities;
- adequate transport links for raw materials in and paper out;
- adequate financial resources to fund continuous investment to maintain and modernise the facility;
- access to technical expertise; and
- a stable operating and maintenance workforce willing to be trained.

Bai Bang's strengths and weaknesses measured against these requirements are shown in table 2.17.

#### 2.17 Competitive strengths and weaknesses of BAPACO

##### **Strengths**

- Well established with some modern machinery
- Expanding wood resource allowing increased paper output in future
- Professionally planned plantation establishment program
- Low capital cost charges
- Vietnamese run for Vietnamese customers
- Well equipped training school

##### **Weaknesses**

- Single unit power boiler limits pulp mill output
- Low brightness capability of bleach plant limits perceived paper quality
- Mill investments have not kept up with quality demands in present market – paper brightness, opacity and surface strength need improving
- Requirement to be a 'good citizen' and financial control exerted by VPC may limit availability of capital
- Poor road system is a barrier to close links with major market centres



# 3 Performance of forestry and side projects

VPMC makes a small profit in a heavily regulated commercial environment. Its contribution to government revenue is also small and the average wage it pays its workers is only one third that received by BAPACO workers. Decision making processes in VPMC are Vietnamese in nature, with little evidence of a Swedish influence. A professionally planned plantation establishment program has been implemented. This, together with improvements in log procurement arrangements and worker incentives, is delivering sufficient logs to meet mill requirements. The housing and transport side projects have made effective contributions to the project with the transport project being critical to project success.

THE PREVIOUS CHAPTER ANALYSED the performance of the company responsible for mill operations. Mill performance is heavily determined by the availability of sufficient logs at a reasonable price. In the early years of the project there were ongoing concerns about the quality and quantity of logs available for the mill. Although the Vietnamese authorities at the time of the project planning phase argued that there were plentiful supplies of bamboo and hardwood, it soon became apparent that an extensive plantation program would be needed to secure sufficient supplies for the mill over the medium to longer term.

Since the mill began operations, paper production has been constrained from time to time by inadequate log supplies. Considerable effort has therefore gone into institutional reforms and investments in forestry to improve log availability. Up until 1990 log procurement was the responsibility of a raw material supply union reporting through a board of management to the Ministry of Forestry. The raw material supply union in turn worked with each of the raw material provinces to source logs from forest enterprises in each province. These forest enterprises were controlled by their respective provincial governments. The system was highly bureaucratic and was governed by Ministry plans.

Between 1990 and 1996 the mill was allowed to buy logs from many supply sources. This system was abandoned because it led to uncontrolled destruction of forests.

In 1996 VPMC became the sole provider of logs to BAPACO. VPMC sources its logs from its own forest enterprises, from independent forest enterprises under the control of the provincial authorities in Tuyen Quang, Yen Bai and Lao Cai, and from private growers. Private growers include forest enterprise workers planting trees on forest enterprise land and private farmers. Under these arrangements the supply chain is more direct than previously and easier to control.

In this chapter we analyse the financial performance of VPMC, its management structures and decision making processes. We look at the progress that has been made in plantation development and in reforestation of the hillsides of the forest supply regions, which were cleared in earlier years for firewood and for agriculture.

## Financial position of VPMC

VPMC's revenue is essentially determined for it by the volume of logs demanded by BAPACO and by a set price for logs at the mill door. The volume of logs required depends on the operational efficiency of the pulp mill. As noted earlier, the log price is set by VPC in conjunction with BAPACO. It is based on what the mill considers it can afford to pay to achieve its desired profit level taking into account all other costs. VPMC's costs are dominated by what it pays for logs to growers at the point of supply (the forest). The log price to growers is set by subtracting freight, bridge and ferry costs, storage costs and a regulated profit component for VPMC from the mill door price (table 3.1). Grower prices therefore vary according to location. While this mechanism for determining log prices effectively preserves the profits of both BAPACO and VPMC, it does so at the expense of log growers, who receive the residual.

3.1 Mill door log prices 1997	
	<i>Mill door price<sup>a</sup></i>
	VND/t
Eucalyptus	420 000
Acacia	340 000
Styrax	330 000
Manglieta glauca	330 000
Bamboo	360 000

<sup>a</sup> Prices to growers are about 50 per cent of mill door prices with the difference between grower price and mill door price being absorbed by the costs incurred between the forest and the mill (including VPMC's profit margin).

Source: VPMC.

In contrast to the situation with BAPACO, the accounts maintained by VPMC are poor. The company was not prepared to release any financial information to us. However, VPC provided us with extracts of the financial reports of VPMC for 1995, 1996 and the first nine months of 1997. This data was incomplete and contained considerable discrepancies.

### 3.2 Key financial outcomes for VPMC

		<b>1996</b>
Net turnover <sup>a</sup>	VND million	60 165
Cost of goods sold	VND million	52 784
Gross margin <sup>b</sup>	%	12.3
Production volume	m <sup>3</sup>	107 226
Fixed assets – NBV	VND million	24 930
Inventories (stocks)	VND million	74 204
Trade debtors <sup>c</sup>	VND million	22 106
Current assets	VND million	118 974
Current liabilities	VND million	59 455
Working capital	VND million	58 284
Capital	VND million	43 214
Profit before tax	VND million	1 037
Taxation charge		<b>na</b>
Profit tax rate		<b>na</b>

**na** Not available from the financial reports.

<sup>a</sup> Value of sales less turnover tax. <sup>b</sup> Net turnover less cost of goods sold as a percentage of net turnover. <sup>c</sup> Money owing from sales of paper.

Source: VPMC financial statements.

A summary of the financial position of the company is shown in table 3.2. More details are provided in appendix 3A.

#### Revenue and operating costs

Net turnover (total value of sales less turnover tax) was VND60.2 billion in 1996. The cost of producing these sales was VND52.8 billion. The company made a small profit before tax of VND1.04 billion in 1996.

The accounts show a 73 per cent increase in turnover from 1995 to 1996. Apart from salary expenses of VND9.1 billion in 1996, the financial reports do not provide a breakdown of operating costs.

#### Fixed assets

The accounts show total fixed assets in 1996 of VND24.9 billion, made up of VND22 billion of depreciated fixed assets, VND1.4 billion of construction in progress and VND1.6 billion of long term investments.

#### Current assets and liabilities

In 1996 VPMC had current assets of VND118.2 billion dominated by stock on hand and accounts receivable. Current liabilities were VND59.5 billion. The company had a very small loan (VND2.5 billion) and a small amount of cash on hand (VND9.9 billion) relative to its total current assets.

## Return on capital

In 1996 total capital was VND42.6 billion dominated by paid in capital of VND35.9 billion. The return on capital was low at 2.4 per cent. This compares with a return on capital of 5.5 per cent for BAPACO.

## Wages and employment

Permanent employment by VPMC in 1996 was 2651 persons (1161 female, 1490 male). The total salary expenses were VND9064 million, yielding an average monthly wage of less than VND300 000 (compared with more than VND1 million per month for BAPACO employees). Salary costs represent 17 per cent of the cost of goods sold. There have been large reductions in VPMC's permanent workforce – from around 10 000 workers at the end of the 1980s to 2590 at the end of 1997.

In addition to its permanent employees, VPMC also hires workers on a part time basis for certain times of the year and engages private growers in tree planting operations on a revenue sharing basis. Private growers and other part time workers, which are estimated to involve 9000 to 10 000 persons, can be permanent employees of VPMC, their families or relatives, or other nearby farmers.

## Contribution to government revenue

In 1996 VPMC contributed VND3.5 billion to state taxes (table 3.3). The company appears to be paying an effective profits tax of between 13 and 16 per cent, which is low for a typical Vietnamese company. In addition to the above taxes, the company collected VND2.5 billion from workers in social insurance, health insurance and trade union fees.

3.3 Contribution of VPMC to government revenue	
	1996
	VND million
Turnover tax	763
Profits tax	138
Tax on capital	260
Housing taxes	182
Land tax	710
Natural resource tax	497
Personal income tax	na
Other taxes	976
<b>Total</b>	<b>3 526</b>

na Not available.

Source: VPMC financial statements.

## Short term viability of VPMC

With its monopoly on log supplies to BAPACO and set prices for the logs it sells and what it pays for logs, VPMC's profit stream is reasonably secure in the short term. A key issue over the longer term is whether the prices it is prepared to pay for logs will provide sufficient incentives for logs to be grown. At present, logs are in abundant supply. When additional production capacity comes on stream at Bai Bang the log supply situation will become tighter. However, it is expected that the current plantation inventories and expansion program will be sufficient to meet mill needs on a sustainable basis for production of around 100 000 tonnes of paper per year.

## VPMC management structures, decision processes and interactions with authorities

VPMC is run by a board of directors (one general director, two vice-directors), which controls four administrative and technical departments, 20 forest enterprises and three forest support enterprises. The 20 forest enterprises establish plantations and harvest, manage and protect forests. They keep individual profit and loss accounts to report to the company's financial department. The three other enterprises consist of:

- a road construction enterprise – which constructs access roads;
- a forest product transporting and trading enterprise – which trades and transports logs to the mill; and
- a forest design enterprise – which undertakes plantation and harvest design to specified environmental and silvicultural requirements for the company.

Each forest enterprise has a director, vice-director and chief accountant, and several plantation brigades. The organisational structure is direct and simple with enterprise directors managing their enterprises according to company regulations.

## Rewards and sanctions

Salaries for workers in company management and administration are set according to government regulation and reflect a minimum payment plus increment based on seniority and location rather than performance. Salaries for forest workers are based on quantity of work done. Forest worker salaries are low compared with salaries of workers in other nonagricultural sectors. But they are high compared with agricultural incomes (which is generally the next best alternative form of work for forest workers), they are paid regularly and there is a retirement pension as an additional enticement plus what can be earned from private plantations. For these reasons, forest enterprises have no trouble in finding workers.

Like BAPACO, VPMC has bonus and welfare funds. But, because the company has only a small income, distributions from these funds are low and do not

provide much of an incentive to workers. There is some resentment among VPMC employees of their low salaries compared with the salaries earned by BAPACO workers.

The government's land allocation policy, aimed at reforesting bare land, has provided strong financial incentives to forest workers. Under this policy forest enterprises are given land and funds to plant trees according to their capability. Forest enterprises in turn redistribute this to their employees, finding it an effective way to plant and protect forests. Employees also receive tree nursery services and other technical support. Land close to employee houses is highly prized. Areas located far from the houses stay with the enterprises, which then assign workers to plant and protect them.

Additional earnings from this source can be substantial compared with their salaries. A further incentive is that workers can control the land if they are able to successfully plant it to trees.

The main sanction on forest workers is threat of job loss through the extensive and continuing downsizing of forest enterprises. Dismissal for poor performance is rare.

### Decision making processes

VPC controls major purchasing, log pricing and selling decisions, though VPMC has autonomy in day-to-day spending operations. Log harvest plans require approval from VPC and MARD. VPMC is subject to pressure from provincial authorities to buy timber from local farmers even when its own supply of logs exceeds mill demands. The communist party steering committee exerts a strong influence on personnel matters.

Plantation investment plans are controlled by VPC as follows.

- Based on the production plans of BAPACO, VPMC's planning department calculates the required log volume and plantation needs.
- Forest enterprises state their plantation capabilities in terms of land area and labour.
- VPMC's planning department reconciles these two plans and sends a proposal to VPC for consideration and modification.

Unlike the case with BAPACO, the decision making processes in VPMC are similar to those usually employed in Vietnamese companies. They are cumbersome, time consuming and dominated by group decision making. There is very little evidence of a Swedish influence on company management.

### Expanding log supplies

The availability of logs and the quality of pulp they yield is critical to the long term viability of the mill. There was considerable doubt about the supply potential of the forests at the time the decision to proceed with the project



*Since the mill began operations, paper production has been constrained from time to time by inadequate log supplies. For the time being log supply does not seem to be a problem. Logs being driven down Song Lo, 50 km north of Bai Bang.  
Photo © Heldur Netocny/  
PHOENIX.*

was made. No firm evidence of sufficient future supply was provided by the Vietnamese authorities (Scanmanagement 1990).

This had two important consequences.

- The paper mill design capacity was constrained to 55 000 tonnes and pulp mill design capacity was constrained to 48 000 tonnes (which necessitated pulp imports for paper capacity to be achieved).
- An extensive forestry program was put in place at the start to trial and reforest large areas, and build the necessary transport infrastructure to access existing forests.

The initial emphasis was on silviculture, harvesting and transport. This was later broadened to include actions to improve the conditions of forest workers and the bureaucratic structures under which the forest resource was managed and harvested.

The forestry part of the project was split from the main project in 1986 with silviculture and soil conservation activities carried out under the Plantation and Soil Conservation Project, which incorporated social and agroforestry considerations as well as industrial plantations. This work continued between 1990 and 1996 under the Vietnam–Sweden Cooperation Program. And the present Sida funded 1996–2000 Mountain Rural Development Program also contains a substantial social forestry aspect.

## Plantation development

The mill has an assigned raw material area (forestry development area) covering land in the provinces of Vinh Phu, Tuyen Quang, Lao Cai, Yen Bai and Ha Giang. The raw material area, which has been enlarged several times, contains native forests and land suitable for plantations.

Initial supplies were heavily dependent on bamboo from natural forests. Bamboo grows fast (four to five year rotations) and the Vietnamese have a long tradition in growing it. With plantation development, bamboo use has since fallen from 70 to 30 per cent by volume of log procurements with about half the bamboo sourced from farmers. Bamboo sales to the mill are still an important income source for farmers in the lower valleys.

Early plantations were pine and later mainly eucalyptus, styrax and acacia. An inventory was constructed of industrial plantations established between 1984 and 1994 by state enterprises and cooperatives controlled by the raw materials company in the provinces of Vinh Phu, Yen Bai, Tuyen Quang and Lao Cai (Jaako Pöyry Consulting AB n.d.) The total area planted between 1984 and 1994 was 51 300 hectares – consisting of 32 200 hectares of hardwood and 1400 hectares of pine with 10 600 hectares classified as failed, 4300 hectares as destroyed and 2700 hectares as harvested. Over half the failure was due to illegal logging, buffalo damage and disease, with the rest due to silvicultural problems. Total standing volume in compartments of age four and above was estimated at 1.067 million cubic metres (over bark).

Plantation development has accelerated over the past five years with industrial plantation development by state owned forest enterprises and with rapid reforestation by farmers in a belt 50 to 200 kilometres from Bai Bang. The massive increase in tree planting reflects the following factors.

- Improvements in land tenure arrangements through the Forestry Act of 1991, which authorised the allocation of state forest land to private individuals. Under these arrangements farmers can gain security over land for up to 50 years. This has encouraged planting of industrial and fruit trees in the lowlands, and the protection and management of native forest in the highlands. (Donovan, Rambo, Fox, Le and Tran (1997) note that, since the introduction of the 1991 Forestry Act, much of what has previously been classified as swidden land has now been reforested.)
- The introduction of a system of land contracts based on subsidised seedlings, extension advice on planting and management, and revenue sharing arrangements with government and local authorities.
- A growing awareness by farmers of the contribution of treed hillsides to the productivity of upland agriculture through prevention of soil erosion and through retention of water in the high valleys.
- State program 327 introduced in 1994. This program channels funds through provincial departments of agriculture and forestry, and provincial treasuries to subsidise farmers and state enterprises to plant trees to protect



bare hills. The program is believed to have had a substantial impact on new plantings.

- A recognition by farmers that industrial tree planting can be an attractive commercial enterprise. The economics of private plantation development vary considerably between sites. High returns are possible on suitable sites within a reasonable transport distance from the mill. For example, Olney (1995), in a report prepared for the Vietnam–Sweden Forestry Cooperation Program, reports an internal rate of return of 71 per cent on low and midland eucalyptus plantings. By contrast, Hang (1995) concluded from a study of smallholder reforestation projects in central coastal Vietnam that the prices of logs at the farm gate were too low to make such plantings financially attractive.
- A freer market for logs than existed in the 1980s, though with VPMC still being sole purchaser of logs for the Bai Bang mill.

Plantation productivity is being continually improved through better silvicultural techniques, and screening of species and varieties to suit particular sites. In commercial plantations in Tuyen Quang province acacia and styrax are producing 80 cubic metres of logs per hectare (ten year rotation) and manglieta glauca about 100 cubic metres per hectare (15 year rotation).

### The role of the Forest Research Centre

The Bai Bang region has a professionally planned plantation establishment program centred around the nearby Forest Research Centre (FRC). Established 20 years ago, the FRC received extensive funding from Sweden until 1996 and is now part of VPC. FRC employs 90 people, 20 of whom are senior researchers. It concentrates on evaluating tree varieties and establishing silvicultural techniques. It operates trial plantations and a production nursery from seed, cuttings and tissue culture.

The FRC has established about 50 or more species and provenance tests throughout the region and has identified which areas are best suited to which trees. Plantation performance differs considerably between species and locations. Mean annual increments (MAIs) of about 16 cubic metres of logs per hectare over bark have been measured after year ten on unimproved stock. MAIs of above 30 have been measured on tissue culture clones. The FRC has 200 hectares of tissue culture clonal trials.

These measured MAIs are extremely high by European standards. They indicate that Vietnam's forests are capable of rapid production of pulp logs. By comparison, average MAIs recorded in Sweden's plantation forests are around 4 cubic metres of logs per hectare per year. The growth rate ranges from 7 cubic metres per hectare per year in the south of Sweden to only 1 cubic metre per hectare per year in the north.

The FRC provides considerable assistance (seedlings as well as technical expertise) to people who want to plant trees. Extension services include news bulletins and training programs in planting. The FRC has played a major

part in reforestation of bare hillsides and in securing future mill requirements for logs.

The FRC has also been active in helping ethnic minorities in the raw material area. Ethnic minorities who were previously engaged in slash and burn agriculture have proved to be skilled and strong participants in the reforestation programs.

### Current mill needs and plantation availability

There are enough logs from forest enterprise sources to meet current mill requirements. But, to provide farmers with income and to ensure plantation reserves for the future, around 10 per cent of logs are currently being purchased from private growers.

The annual rate of plantings by farmers and the accumulated farmer plantation area is not known, though anecdotal evidence suggests that the increase in wood fibre biomass on private farms is very large.

The current plantation estate of VPMC is shown in table 3.4. Estimates of plantation area by species in the five provinces are also provided by the Forest Research Centre's socioeconomic and environmental monitoring studies (table 3.5). The plantation area and timber volume available to the mill is considerably higher than the estimates in these tables when private plantations and natural forests are taken into account. The government is restricting native forest harvesting and, as plantations come on line, the use of native forest wood at Bai Bang will decline.

The plan of VPMC is to establish 6000 hectares of plantations per year (2500 hectares of styra, 1500 hectares of eucalypt and 2000 hectares of acacia) to achieve a 70 000 hectare plantation estate. Should this be achieved, there will be adequate quantities of wood available to meet the mill's expansion plans. A 70 000 hectare estate managed on a ten year rotation with trees having an MAI of 16 cubic metres per year per hectare over bark, as measured in FRC trials, will provide about 490 000 tonnes (bone dry) of wood annually. This would be enough to produce 280 000 tonnes of paper at 10 per cent ash content. Even with MAIs of only one quarter of this there would be more than enough wood to allow the mill to operate at full capacity.

The productivity being achieved in commercial plantations is still considerably less than that being measured in FRC trials. Productivity using natural seedlings is much lower than productivity being achieved using laboratory developed nursery seedlings in the newer plantations. The goal is to achieve, through more research on the best species for various soil conditions, MAIs of 20 to 25 cubic metres per hectare per year, which is more than double current yields.

The target rate of plantation development is about 20 per cent above the average rate of plantation development that has occurred over recent years. But, with steady improvements in plantation technology being achieved, the target rate of establishment appears physically achievable.

### 3.4 Plantation area and timber volume of VPMC controlled plantations 1997

	Total		Manglieta glauca & styrax tonkinensis		Acacia		Eucalyptus		Mixture of acacia and eucalyptus		Pinus	
	Area ha	Estimated timber volume m <sup>3</sup>	Area ha	Estimated timber volume m <sup>3</sup>	Area ha	Estimated timber volume m <sup>3</sup>	Area ha	Estimated timber volume m <sup>3</sup>	Area ha	Estimated timber volume m <sup>3</sup>	Area ha	Estimated timber volume m <sup>3</sup>
Forests belonging to individual state enterprises	20 019	704 100	10 356	356 000	5 101	222 000	2 686	49 900	844	33 700	850	42 500
Forests belonging to co-operatives (the company invested in)	2 000	60 000					2 000	60 000				
<b>Total</b>	<b>22 109</b>	<b>764 100</b>	<b>10 356</b>	<b>356 000</b>	<b>5 101</b>	<b>222 000</b>	<b>4 686</b>	<b>109 900</b>	<b>844</b>	<b>33 700</b>	<b>850</b>	<b>42 500</b>

Source: VPC.

3.5 **Estimates by the Forest Research Centre of plantation area by species and year**  
Hectares

Year	<i>Eucalyptus camaldulensis</i>	<i>Eucalyptus urophylla</i>	<i>Acacia mangium</i>	<i>Styrax tonkinensis</i>	<i>Manglieta glauca</i>	Other	Total
1986	1 180	0	10	1 550	2 550	540	5 830
1987	1 301	0	20	1 740	860	390	4 311
1988	1 520	0	410	2 500	240	170	4 840
1989	800	800	940	2 690	260	210	5 700
1990	250	1 590	930	2 650	130	50	5 600
1991	200	1 850	1 100	2 700	500	50	6 400
1992	200	1 040	850	2 660	510	610	5 870
1993	200	1 000	1 000	1 950	750	600	5 500
<b>Total</b>	<b>5 651</b>	<b>6 280</b>	<b>5 260</b>	<b>18 440</b>	<b>5 800</b>	<b>2 620</b>	<b>43 760</b>

Source: Nguyen and Huynh (1994).

On a national scale, the Vietnamese government plans to establish 5 million hectares of plantations by 2010. One million hectares of this is designated for pulp production and forms part of VPC's master plan for log supplies.

But doubts still remain about the commercial viability of plantations. At current log prices and growth rates, non-subsidised interest rates are too high to make plantation investments viable. Enterprises need tax exemptions for the first and second rotations to ensure viability. VPMC spent VND21 billion in 1997 on 3500 hectares of new plantations. About VND15 billion of this was a soft loan from the government. And more money is needed to fund the construction of plantation access roads.

### Incentives facing forest workers and private growers

The incentives facing forest enterprise workers and private log growers are critical determinants of log availability. The poor conditions of forest workers were identified in a 1984 socioeconomic study of raw material supply (Larsson and Birgegard 1985) as a major factor constraining the supply of logs to the mill. As discussed in chapter 6, the present situation is vastly different. Average wages of forest workers in forest enterprises now exceed 400 000 dong per month, which is substantially higher from the incomes for local people not employed in forest enterprises. In addition, forest workers have access to income from planting trees on land made available by the forest enterprise. Workers receive low interest loans to provide further encouragement to tree planting and sell the grown trees to VPMC under a nominated revenue sharing arrangement. An average of VND150 000 per month is obtained from this source.

Housing standards of forest workers have also improved markedly, with most now living in separate houses of brick and tile with cement floors – superior accommodation to that of neighbouring farmers. Houses have access to gardens of between 1000 and 5000 square metres. Health and education

provisions have also vastly improved. Because of the very favourable working conditions, it is now easy to recruit forest workers.

Some private growers and forest enterprise managers considered that the prices they were receiving for logs in the forest provided inadequate returns for their efforts. While incentives to date have been sufficient to encourage a big increase in tree planting, at issue is whether prices to growers will need to be raised over the longer term to encourage continuous planting on a sufficient scale to meet mill requirements. Log prices in the future will be shaped by a combination of factors, including the demands by the mill and other enterprises for the logs and the extent to which advances in silvicultural techniques deliver improved log growth rates and plantation productivity.

## Performance of other side projects

In addition to forestry and related activities directed at plantation and soil conservation and the living conditions of forest workers, the project also involved side projects covering vocational training (considered in chapter 5), housing and transport.

### Housing

The housing side project, which commenced in 1984, aimed to provide a standard of community living conditions sufficient to attract and motivate the industrial workforce. Under the project 154 houses were constructed for mill workers and their families. These houses are well maintained and of a higher quality and larger size than the norm in today's Vietnam. They are serviced by roads (paved by BAPACO) and are made available to employees at very low rents (around US\$3 per month in 1997).

The project has fulfilled its aims. The town today enjoys extremely high community living conditions, which the housing project has contributed to. The high quality of housing and other community infrastructure makes Bai Bang an attractive place to live and work in.

### Transport

In the early operations phase the supply of raw materials to the mill was heavily constrained by inadequate transport facilities. A transport side project commenced in 1985 to supply a fleet of pushers and barges for river transport of coal and limestone, and a river harbour with modern unloading facilities close to the mill. The transport side project has made, and continues to make, a critical contribution to the efficiency of mill operations.

Transport facilities are now operated by a transport division within BAPACO. The division operates barges and the port, and also a fleet of well maintained vehicles (mostly Swedish) and continues to buy equipment from Sweden. As well as providing workshop services for mill transport equipment, the transport division provides about 20 per cent of its services to outside customers.

# 4 Economywide impact

We estimate that in 1996 the mill and forestry generated about VND465 billion of additional national income (US\$42 million), supporting additional real private consumption expenditure of about VND2900 per Vietnamese citizen and generating an additional VND63.3 billion in government revenue. Because of paper import replacement, the balance of trade improves by VND445 billion. The regional impact is considerably more significant. About 54 per cent of mill and forestry wage income accrues to male mill workers, 24 per cent to female mill workers, 12 per cent to male forestry workers and 10 per cent to female forestry workers.

THE ANALYSIS in chapters 2 and 3 was concerned with the performance of mill and forestry operations conducted by the two companies responsible for that performance. Mill and forestry operations in turn ‘spill over’ to affect the performance of the regional economy and the national economy as industries buy and sell from each other. In this chapter we address the following questions.

What is the impact of the project on the regional economy and the national economy and what are the main pathways through which this impact occurs? How much does the mill and associated forestry activities contribute to national income, the balance of trade and the public funds balance? And how is the income generated by the project distributed across different categories of workers?

The mill and associated activities impact on the regional and national economies through a number of pathways.

- The mill spends on inputs. Some of these, such as coal and logs, are produced domestically. This expenditure raises output, employment and income in domestic input supplying industries such as mining, forestry, chemicals and petroleum. To expand their output, input supplying industries must also spend on inputs, some of which are supplied by other domestic industries.
- The mill spends directly on imported inputs. And input supplying industries are also partly reliant on imported inputs. This requires foreign exchange earnings from exports to pay for them and has implications for the balance of trade.
- The mill spends directly on labour. This creates direct jobs and wage bills also expand in input supplying industries. Wage bills are in turn spend on domestic and imported goods and services. This leads to growth in output, employment and income in domestic industries supplying consumption

goods and services (local restaurants, leisure facilities, etc.) and to foreign exchange requirements for imported goods and services.

- The mill provides bulk paper for further processing. This provides employment and income earning opportunities for further processing into finished products.
- The mill provides paper for local residents. To the extent that Vietnamese paper demands are met by local production, foreign exchange is saved through lower paper imports.
- The mill uses labour of various skill levels, and other goods and services which may be in limited supply. Labour, capital and raw materials used by the mill are not available to contribute to output, employment and income elsewhere in the economy. That is, the mill has a cost in that it crowds out other activities that might have used these inputs.
- The mill contributes to government revenue directly. Both BAPACO and VPMC pay taxes to regional governments and the central government on their turnover, profits and capital. The expansion in output of industries supplying inputs to the mill, and industries supplying goods and services to wage earners in mill companies and supplier industries has resulted in an expansion in the tax base and hence taxation revenue. Governments in turn spend this revenue, which provides a further stimulus to economic activity and employment, and provides physical and social infrastructure, which enhances community living standards.
- Each time spending occurs as a result of mill activities, production and employment receive a stimulus somewhere in Vietnam. The stimulus may occur in the local district (such as in the case of paper converter activity in Phong Chau townlet), in neighbouring provinces (for example, through forest operations in Tuyen Quang province) and in provinces far removed from the mill (for example, through government spending throughout the country of taxation revenue collected from mill and associated activities).

Our analysis of the impact of the project on the regional economy is based on information collected on the cost and sales links between the mill and regional industries. We address the impact of the project on the national economy by using an economywide model. The model quantifies the direct and indirect links between the mill and other sectors of the economy, giving due consideration to the income foregone from using resources for paper production at Bai Bang rather than in some alternative activity.

## Regional impact

The mill is located in Phu Tho province (Vinh Phu province under the old boundaries) in the district of Phong Chau (legendary capital of 18 King Hung dynasties) between the Red and Lo Rivers. The district (population 240 000) is the centre for economic, political and military affairs in the province and contributes 40 per cent of the province's budget. Phong Chau district townlet

was founded by the government at the end of 1979 to administer the Bai Bang industrial zone. The mill is the largest enterprise in the district. Other industries include a chemical and fertiliser factory, military factory and battery factory.

The district's budget comes from taxes on local business and provincial government allocations. The mill does not contribute directly – its taxes go to the central government – but makes a major indirect contribution through expenditure of mill employees on goods and services provided by local businesses.

As well as contributing to local business development indirectly through spending of wages by workers and their families, the mill sustains a number of local businesses through its purchase of inputs and through product sales for further processing.

- The mill purchases alum from a local factory employing 13 people and producing 500 tonnes of alum per year.
- The mill purchases glue from a silicate glue factory producing 100 tonnes of glue per year.
- About 150 to 200 people in Phong Chau are engaged in supplying bamboo chips to the mill.
- There are 18 paper converters in Phong Chau converting reject paper from the mill each year into carton paper and tissue paper, and in making exercise books from mill paper. In total they convert about 300 tonnes of paper per year. On average about 10 people are employed in each local converter business – about 180 people in all.

As a result of the mill, the nearby Phong Chau townlet (population 16 000) is the richest in the district and province with flourishing small business, very high housing standards and social infrastructure (chapter 6).

Phu Tho province in 1997 had an estimated provincial income (GDP) of about VND3000 billion. Income generated directly by the mill accounts for about 5 per cent of Phu Tho GDP.

The project's contribution to Phu Tho GDP is somewhat larger than the direct contribution from mill income. To the direct contribution from the mill income we must also add the net income generated by local industries within the province from supplying inputs to the mill and from supplying goods and services to satisfy the wage spending of mill workers.

About VND34.5 billion (8.7 per cent) of 1996 mill expenditure is spent on wages. These wages are in turn spent on goods and services to meet the consumption needs of wage earners. Some of these goods and services are supplied locally, which adds to the prosperity of the local business community, while some leak to other domestic supplying regions and to imports. From our survey of the profitability of Phong Chau businesses and their degree of dependence on the expenditure of mill workers and their families (see chapter



6), we estimate that income generated by these businesses through providing goods and services to mill wage earners and their families accounts for about 0.5 per cent of provincial GDP.

In addition to its role in generating income, the mill makes significant contributions to social infrastructure in the district. BAPACO provides support to:

- local schools;
- the local medical station (where emergency access is for all local residents not just employees);
- the electricity network (5.5 kilometres of lighting and 1.5 kilometres of high voltage cabling provided);
- road development (9.5 kilometres of road recently upgraded);
- the local water supply (about 55 per cent of the population use the water supply from the mill);
- the electricity grid (5.5 per cent of the population purchase mill electricity at a 20 per cent price discount to the market price);
- leisure facilities (the mill provided swimming pool, sports stadium and club can be used by all local residents);
- environmental improvement (VND500 million provided by BAPACO in 1995); and
- natural disaster relief (flood and storm mitigation help).

### Links to regional activity through mill expenditure

Around one third of the 1996 expenditure of the mill was on imported pulp. This represents a leakage from the Vietnamese economy. A further 55 per cent was spent on raw materials – logs, chemicals, coal, etc. – nearly all of which is supplied domestically (logs from the five northern provinces covering the mill's raw material area, limestone from Ninh Binh province, salt from Nghe An and Binh Thuan provinces, and coal and rosin from Quang Ninh province). Domestic expenditure on these items stimulates output and employment in the activities supplying these materials and in the regions in which the supplying activities are located. Major suppliers are VPMC (through which e.g. Tuyen Quang Forest Products Company supply logs to the mill), the Vinh Phu Petrol Company (fuel), the Phu Tho General Trade Company (equipment, machines, chemicals, imported pulp) and the Vietnam Coal Corporation (coal). Table 4.1 contains information on the activities of these companies and the importance of the mill as a customer.

VPMC is 90 per cent dependent on the Bai Bang Paper Company for its sales. The direct impact of Bai Bang can therefore be estimated as an injection of 2880 million dong annually into the company, the employment of 2340 full-time workers (with an average monthly income of VND470 000 in 1997)

#### 4.1 Major supply companies to Bai Bang Selected information, 1997

Company	Form of ownership	Main services and products	Total sales	Bai Bang purchases as % of total sales	Contribution to government	Profit	Employment		Average monthly income <sup>a</sup>	Flow on employment <sup>b</sup>	
							Full time workers	Part time workers			
VPMC	Central-state	Log procurement	VND million 72 000	% 90.0	VND million 3 200	VND million 1 300	No. 2 600	% 56.2	No. 10 000	VND 470 000	No. 10 000
Tuyen Quang Forestry Company	Local state	Log procurement	11 000	100.0	300	50	100	85.0	50	300 000	1 500
Vinh Phu Petrol Company	Central-state	Fuels	218 814	1.5	21 552	4 000	306	54.2	0	500 000	0
Phu Tho General Trading Company	Local state	Equipment, materials, imported pulp	107 000	46.7	450	60	320	35.0	30	500 000	120
Vietnam Coal Corporation	Central-state	Coal	na	Less than 2.5	na	na	na	na	na	na	na

na Not available.

<sup>a</sup> Includes bonuses and special payments. <sup>b</sup> Estimate of number of people, apart from those employed directly, dependent on company (supplying material, transporting goods, selling goods and services to firm).

Source: Outsider survey conducted for the evaluation.

and the annual contribution of VND2880 million to government in taxation. A further 9000 workers are engaged on a part time basis in growing wood for the company.

VPMC and other input suppliers also spend on wages, and goods and services in producing inputs for Bai Bang. This expenditure creates further flow-on effects on employment, output and income in industries servicing these expenditure needs.

Expenditure by VPMC in 1996 was VND52.7 billion. Of this, VND9.1 billion was wages for VPMC's 2651 direct employees. These wages are in turn spent on goods and services providing a stimulus to output and employment in the regions supplying these goods and services. No further breakup is provided in the company's financial accounts, though the majority of the remainder is payments to log suppliers.

Table 4.2 shows the annual estimated injection of purchasing power into the wood supply regions in 1997 assuming that 50 per cent of the mill door price is returned to the grower. This injection is in turn spent by regional growers on goods and services. Some of these goods and services are provided locally, providing a flow-on stimulus to output and employment in regional economies.

**4.2 Estimated injection of money to log supply regions from purchase of logs from Bai Bang** Based on 1996 log prices and volumes

<b>Region</b>	<b>Percentage of logs</b>	<b>Estimated injection of money from sale of logs</b>	<b>Population of province</b>	<b>GDP per capita</b>	<b>Employment in state forest enterprises in each region</b>
	%	VND billion	Million	US\$	No.
Tuyen Quang	30	13.38	0.66	250	1 750
Ha Giang	10	4.46	0.55	100	750
Yen Bai	15	6.69	0.67	130	1 500
Vinh Phu	40	17.48	1.1	na	250
Phu Tho			1.25	192	960

na Not available.

Source: Compiled from information supplied by VPMC.

About VND42 billion per year is injected into the log supply regions from the purchase of logs for Bai Bang. This injection is used to pay the wages of forest workers and other inputs to log growing and harvesting with the surplus accruing as profits to forest enterprises. A share of these profits is in turn spent on amenities for workers.

The difference between the cost of logs at the mill door and the payment for logs at the point of supply is spent on transport and other service costs incurred between forest and mill. This expenditure also generates economic activity and employment in Phu Tho and neighbouring provinces.

Only 1.5 per cent of the sales of the Vinh Phu Petrol Company are to BAPACO. The petrol company sources its product outside the region, which is where the flow on benefits from its servicing of BAPACO's needs accrue. Nearly half the sales of the Phu Tho General Trading Company are to BAPACO. The trading company sources its inputs to BAPACO from throughout Vietnam and overseas. Less than 2.5 per cent of the sales of the Vietnam Coal Corporation are to the mill.

### Factors influencing and inhibiting these links

By far the strongest link between the mill and other industries is its link to forestry operations through VPMC. This link is orchestrated through the monopoly given to VPMC by VPC as sole supplier of logs to BAPACO. Advantages of this arrangement are:

- the mill has a secure supply of logs at a set price; and
- the authorities can identify the source of the logs and hence can control rates of harvest, area and location of harvest, which assists management of the forest estate and assists in controlling illegal logging.

Disadvantages are:

- log suppliers can be squeezed on prices;
- log suppliers have restricted opportunities to sell logs elsewhere; and
- BAPACO cannot choose between suppliers and prices.

It is highly likely that the VPMC log monopoly is creating inefficiencies in resource allocation in the log growing and distribution sector. More competitive supply arrangements would allow logs to flow to their highest value end uses and achieve better incentives to growers in different regions.

The next most important link is between the mill and the Phu Tho General Trading Company, through which the mill coordinates substantial material purchases. The trading company in turn is linked to a range of suppliers in Vietnam and overseas. BAPACO is not allowed to import directly – importing equipment and materials must be done through VPC. This reduces the commercial flexibility of BAPACO and hence its profit performance.

BAPACO also has downstream links to customers. More than 160 customers purchase its paper. The customer links are tightly controlled by VPC, which buys and resells 50 per cent of BAPACO's paper and prevents it from establishing other avenues for selling its rolled paper. This restriction is a significant constraint on BAPACO's commercial operations and profitability. It prevents BAPACO from aggressively marketing its products to domestic customers.

## Impact on national economy

The national economic contribution of the project is the amount it contributes to improving living standards of Vietnamese citizens. Measures of this contribution are how much the mill adds to national income (real GDP) and how much additional real consumption it makes possible. To obtain such measures requires that we add up the net income generated by the mill directly and indirectly through its links to other industries in the economy. We also need to take into account the ‘crowding out’ effects of the mill. Resources used by the mill are not available for use in other income generating activities – hence potential income is lost elsewhere. And production at Bai Bang may raise the demand for inputs and hence their price and cost to other industries, leading to reduced growth prospects for these other industries. An economywide model, which incorporates the links between the mill and input supplying industries and downstream users, and which accounts for the total availability of resources and their demands by all industries, is needed to determine this.

By accounting for all sectors of production and demand in the economy and the relevant resource constraints, the model (see appendix 4A for details) determines the impact of mill production on each sector of the economy and on key macroeconomic aggregates such as real GDP and the balance of trade.



*Rice field not far from the Phong Chau township. The economic activity at the mill is helping to spur economic growth in the region. Photo A. Berlin.*

The model divides the Vietnamese economy into 41 sectors of production. Paper production is covered by two sectors: the Bai Bang Paper Company, which is modelled as a separate industry; and a second sector that includes all other Vietnamese paper production. A forestry sector supplies logs to the two paper production industries.

The model is constructed around an input–output database for Vietnam for 1996. The database incorporates the cost structure for Bai Bang as revealed in BAPACO’s financial records and the industry sectors (both domestic and imported) from which it sources its inputs. It also incorporates the sales structure of its products to households, government, and industry to commerce.

In 1996 Bai Bang was the largest of Vietnam’s 93 paper mills, accounting for 26 per cent by volume of Vietnam’s paper production of 219 000 tonnes. Other large mills are Dong Nai (annual production of about 15 000 tonnes of mainly printing and writing paper) and Tan Mai (annual production of about 40 000 tonnes of mainly newsprint). Net imports (imports less exports) of paper in 1996 were 55 000 tonnes, implying per capita consumption of about 3.6 kilograms of paper per person.

### National economic contribution of the mill

The contribution of the mill to the economy is assessed by simulating the effects of closing the mill assuming that the other mills are unable to expand their production to fill the gap. This is a realistic assumption in the short term. The analysis assumes that tariffs on imported paper remain unchanged with no quantitative restrictions on paper imports. All paper imports are assumed to pay the tariff (no smuggling). Other important assumptions are that nominal wages economywide, the level of real government consumption expenditure, real aggregate investment in the economy and capital in use in all other sectors remain unchanged. Results are in table 4.3.

4.3 Economywide impact of closing the Bai Bang mill 1996		
	Percentage change from base	Value
	%	VND billion
Real GDP	- 0.18	- 465
Real consumption	- 0.10	- 217
Real exports	0.15	125
Real imports	0.48	570
Balance of trade		- 445
Aggregate employment	- 0.15	na

na Not applicable.

Source: Economywide model for Vietnam.

Value added at the mill accounts for 0.09 per cent of Vietnam’s GDP. This represents the mill’s direct contribution. To this we must add the indirect contribution through the mill’s effects on the performance of other sectors.

If Bai Bang were to close it would cease to purchase logs and other raw materials. This would reduce output, income and employment in input supplying industries, but not by the full amount of Bai Bang's purchases. These industries would be able to divert some of their production to other markets in Vietnam and overseas. Bai Bang would cease to employ labour. But some workers would be able to find employment in other industries. Reduced wage payments would mean reduced consumption expenditure by workers and their families, leading to losses of output, employment and income in domestic industries supplying goods and services to satisfy this consumption. Bai Bang would cease to import pulp and equipment. While this would save foreign exchange, imports of paper would be needed to replace the lost production causing an increase in foreign exchange requirements.

With Bai Bang closed Vietnam must spend more on imported paper. Imports of writing and printing paper are projected to increase by 244 per cent. As a result, the balance of trade deteriorates. Jobs are lost at Bai Bang and in input supplying industries, reducing wage income and real consumption expenditure. Aggregate employment falls by 0.15 per cent. There is a small reduction in the overall level of costs in Vietnam as Bai Bang ceases to make demands on domestic resources. This provides a small stimulus to exports offsetting somewhat the effects on the balance of trade from additional spending on imported paper. The net result is a reduction in real GDP of 0.18 per cent (equivalent to a loss of VND465 billion per year in 1996 values). The fall in real private consumption expenditure is less than the fall in GDP – private consumption expenditure is sustained somewhat at the expense of a deterioration in the balance of trade. The balance of trade deteriorates by VND445 billion through the need to spend more on imported paper.

Table 4.4 presents projected changes in output for an aggregated level of sectoral detail. Industry production across all sectors in the economy (including Bai Bang) falls by an average of 0.2 per cent. The reduction in production of the forestry sector is only 0.1 per cent. There are two reasons for this. Demands by Bai Bang on Vietnam's forestry sector account for only a small percentage of the sector's total production (our estimate is less than 1 per cent). And, with Bai Bang not purchasing logs and a slightly lower overall level of costs in the economy, there is a small stimulus to exports of forestry products (exports are projected to increase by 1.7 per cent).

## Effects on public funds balance

The analysis in chapter 2 indicated a direct contribution of BAPACO and VPMC to government revenue of about VND52 billion in 1996. This would be lost if Bai Bang were to close. In addition, the government would lose revenue (from turnover tax, profits, tax, etc.) through the contraction in output and profitability of other industries linked directly and indirectly to Bai Bang. Offsetting this somewhat would be taxation revenue increases from sectors that are able to expand their output as the 'crowding out' effect of Bai Bang ceases.

#### 4.4 Effects on sector performance of closing Bai Bang mill

<b>Sector</b>	<b>Output % change</b>
Agriculture	0.0
Forestry	-0.1
Fishing	0.0
Mining	0.0
Fuels	-0.8
Food processing	-0.1
Textiles, clothing and footwear	0.0
Wood processing and products	-0.1
Bai Bang	-100.0
Other paper and products	0.2
Petroleum and natural gas	-0.9
Chemicals and products	0.0
Cement	0.1
Other non-metallic minerals	0.1
Ferrous and non-ferrous metals	-0.1
Machinery and electrical equipment	-0.1
Other industry	-2.2
Electricity, gas and water	-0.2
Construction	0.2
Trade and transport	-0.2
Communication	-0.1
Finance and insurance	-0.1
Public administration, health, education, etc.	0.0
Personal services	0.0
All industries	-0.2

Source: Economywide model for Vietnam.

The structure of Vietnam government sector revenue in 1996 is shown in table 4.5. BAPACO and VPMC accounted for 0.085 per cent of this revenue. Based on model projections of how changes in sector performance following the closure of Bai Bang would change each of these components of the tax base, the total effect of the closure of Bai Bang is an estimated reduction in government sector revenue of VND63.3 billion. That is, in addition to the VND52 billion in revenue lost from BAPACO and VPMC, a further VND13 billion is estimated to be lost elsewhere in the economy.

#### 4.5 Structure of Vietnam government sector revenue 1996

	<b>Revenue VND billion</b>
Agricultural tax	1 850
Natural resources tax	2 960
Turnover tax	9 900
Special consumption tax	3 000
Profits, capital and land tax	10 255
Personal income tax	1 050
Transfers – depreciation allowance	960
Import and export duties	15 000
Other (includes grants)	15 945
<b>Total</b>	<b>60 920</b>

Source: Ministry of Finance, Vietnam.



This loss in government sector revenue would be borne by all regions – through the various revenue sharing agreements that exist between the different levels of government in Vietnam.

## Contrasting national and regional effects

The model-based analysis shows that the contribution of the mill and associated forestry and other activities to national economic performance is small in percentage terms. This is hardly surprising. Income and employment generated by Bai Bang is only a very small percentage of national income and employment. The impact is more significant at the regional level and larger still for the Phong Chau district – Bai Bang is the dominant industrial activity in the district.

Because interregional flows of economic activity are not known, it is not possible to quantify the impact at the regional or district level. Expenditure from income generated by the Bai Bang mill ‘leaks’ through interregional trade flows to stimulate economic activity and employment in other regions.

## Some caveats

The Vietnam model, like any model, is a simplification of the real world. Its purpose is to help us understand the interactions in the economy – particularly the interactions between Bai Bang and other sectors. Its accuracy in determining the effects on the economy of closing Bai Bang will depend on:

- how well the links between Bai Bang and other sectors are specified in the model’s input–output database;
- how accurately the numerous parameters in the model reflect the behavioural responses in the economy; and
- how appropriately the model’s theory is for Vietnam.

Details on each of these components are set out in appendix 4A. As indicated in the appendix, there are significant shortcomings in each of these areas. The available data on interindustry links in Vietnam is incomplete. And there are no available statistical estimates of response parameters. Numerous simplifications and assumptions have had to be made to formulate the model.

For these reasons, the results presented in tables 4.3 and 4.4 should be viewed as indicative rather than definitive. But simplifications and assumptions are also strengths in that they make explicit what is going on in the model. If necessary, particular assumptions can be modified to test their importance.

We are confident that our database reasonably describes the size of Bai Bang relative to other sectors and Bai Bang’s use of domestic resources. We are less confident about behavioural responses. Sensitivity analysis shows that the results are sensitive to the assumed degree of substitution between domestically

produced and imported paper. Our analysis has assumed a moderate degree of substitution. If Bai Bang paper is a lot less substitutable with imported paper than our choice of substitution parameters implies (see appendix 4A), then the effects on the economy of closing Bai Bang would be significantly larger than indicated by our results.

## Distribution of income from mill and forestry

As we have shown, the Bai Bang paper mill generates income for the Vietnamese economy. The main direct beneficiaries in the first round are the workers at the mill and in forestry activities. Most of this income comes from wages paid – by BAPACO and by VPMC. Workers receive additional rewards through the distribution of profits into company bonus and welfare funds.

### Income distribution within BAPACO

BAPACO pays equal salaries to males and females for each salary classification. There are, however, significant differences in the distribution of male and female employment across departments within BAPACO (chart 4.6).

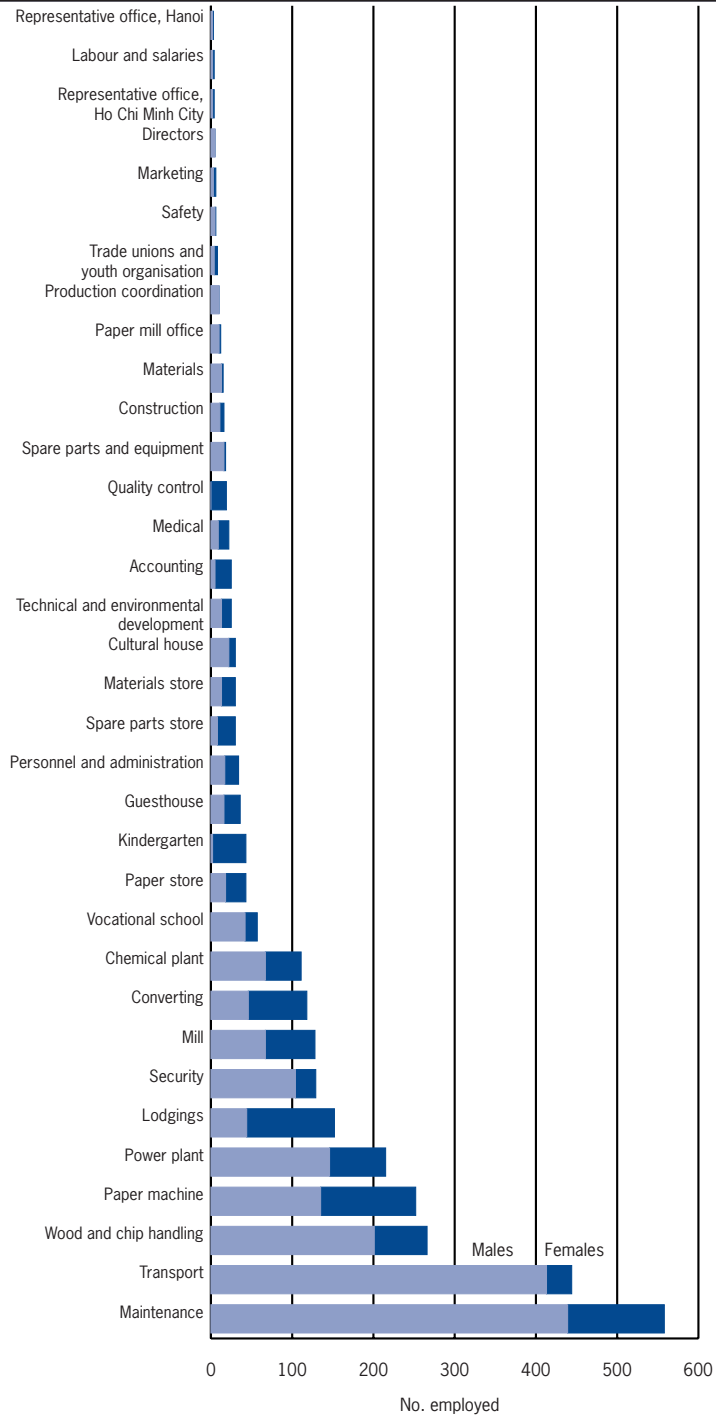
Of the 2874 BAPACO employees in November 1997, 66 per cent were males and 34 per cent were females. All directors are males. All quality control workers are females. Males dominate a number of departments such as security, woodchip handling, maintenance and transport. Females also dominate some departments such as accounting, paper converting and kindergarten.

Ninety-nine per cent of workers were classified as permanent and only 1 per cent as temporary. Salaries are set according to skill levels and are based on state regulations and mill performance. There are four broad salary levels according to type of service, with average 1996 salary levels as follows.

- *Management.* Average monthly salary VND1 210 000 – equivalent to US\$109 or SEK731.
- *Production.* Average monthly salary VND1 095 000 – equivalent to US\$99 or SEK662.
- *Production assistants.* Average monthly salary VND804 473 – equivalent to US\$72 or SEK486.
- *Other services.* Average monthly salary VND650 000 – equivalent to US\$59 or SEK393.

The difference between the highest salary and the mill average cannot exceed three times. The mill general director receives a multiple of 6.7 times the payment to the lowest paid worker. Our survey of mill workers (chapter 6) found that average manager incomes were only a little more than double those of average worker incomes. The range between manager incomes is very large – lower management levels receive not much more than skilled workers, but the highest paid eighteen managers receive over VND3 million

4.6 Distribution of male and female employment at paper mill November 1997



Data source: Mill records.

per month. Of the 70 managers (deputy department heads and above) 17 were women. We estimate that:

- of the total wage bill of BAPACO of VND34.5 billion in 1996, about 70 per cent went to males and 30 per cent to females; and
- the average wage earned by females appears to be about 10 per cent less than for males – due entirely to a higher percentage of females in the lower wage categories.

We have no information on how non-salary rewards, such as disbursements from the welfare fund to employees encountering financial and social difficulties, are distributed between males and females.

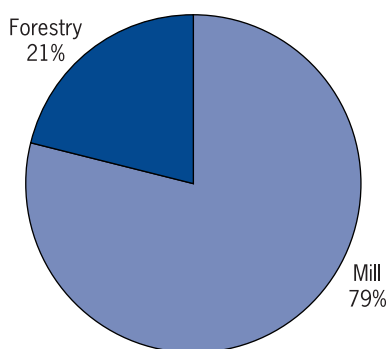
### Income distribution within VPMC

VPMC, like BAPACO, pays the same wage to males and females of the same job classification. The distribution of income between males and females follows from the distribution of employment between males and females. Our estimate is that 56 per cent of VPMC's 1996 wage bill to permanent employees of VND9064 million is paid to males and 44 per cent to females.

### Distribution of income from mill and forestry combined

Of the combined wage bill of the two companies for permanent workers (VND43.6 billion in 1996), 79 per cent is absorbed by mill workers and 21 per cent is absorbed by forestry workers (chart 4.7).

**4.7 Distribution of mill and forestry wage income between workers**

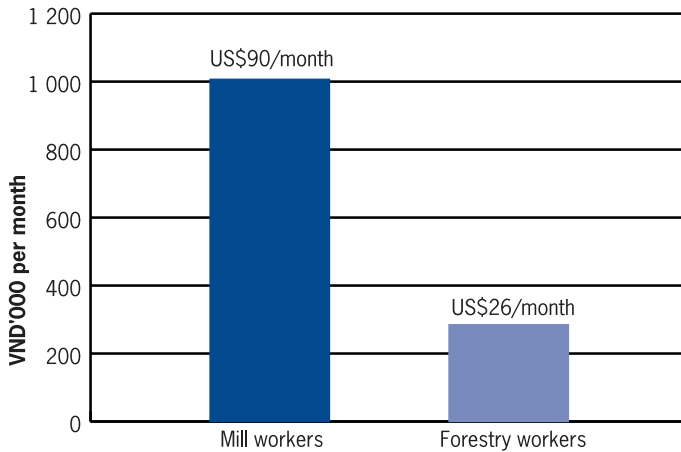


Data source: BAPACO and VPMC financial records.

Mill and forestry combined employed 5509 full time workers in 1996, of which 52 per cent were employed in mill operations and 48 per cent in forestry operations. The reason for the much higher share of income accruing to mill workers reflects the much higher wages at the mill – average mill wage of about 3.5 times the average forest worker wage (chart 4.8). Our surveys of

forest workers (chapter 6) revealed incomes in 1996 about 10 per cent higher than implied by the wage bill records and further strong growth in income in 1997.

#### 4.8 Average wages of mill and forestry workers 1996



Data source: BAPACO and VPMC financial records.

To a larger extent these wage differentials reflect differences in the productivity of labour between the two activities. Relative to mill production, forestry is a low productivity activity – the low wages of workers reflect the low productivity of tree growing as well as an element of illegal logging, which is difficult to control.

The very uneven distribution of income between mill and forestry workers is an issue of contention among workers at VPMC (chapter 6). Many VPMC workers consider themselves to be underpaid relative to BAPACO workers. The feeling of wage injustice is accentuated by the generous social conditions of employment enjoyed by BAPACO workers. VPMC is unable to come anywhere near matching these conditions for its forest workers.

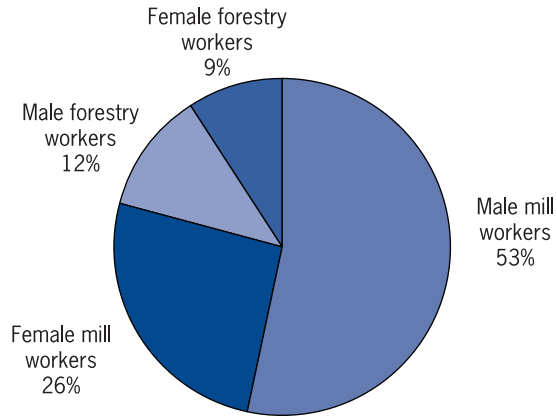
The distribution of the combined mill and forestry full time worker wage bill across males and females is shown in chart 4.9. Over half the wage income accrues to male mill workers and 24 per cent to female mill workers.

## Other income derived from the mill and forestry

VPMC also engages large numbers (between 9000 and 10 000) workers on a contractual basis to help with forest growing operations. These persons are rewarded under a number of different arrangements – payment for work

done, profit sharing arrangements and so on. Many are also permanent employees of VPMC. The supplements to income received from participation in private forestry vary considerably between participants (chapter 6) and have not been included here.

**4.9 Distribution of mill and forestry wage income across males and females 1996**



Data source: BAPACO and VPMC financial records and survey results.

# 5 Contribution of the project to human resource capacity building

The project has made a substantial contribution to human resource capacity building through training during the construction phase, transfer of knowledge training, a technical assistance program for managers, support of the regional forestry training school and the establishment and support of the Vocational Training School. Benefits have accrued to mill workers as higher wages and to mill capital as higher profits. Significant benefits have also accrued to workers and enterprises outside the mill. The advent of doi moi provided an opportunity for the Scandinavian management model to flourish. Its legacy is strong, but it is doubtful if it would have survived without the change in external environment.

WHAT IMPACT HAS THE PROJECT MADE to human resource capacity building? How has the technological and managerial training under the project affected the human resource capacity at Bai Bang and how has this training affected the professional lives of workers? What was the content and impact of the so-called ‘Scandinavian management model’? What spillover effects have there been of the training element of the project to other institutions in Vietnam? We have addressed these issues through:

- analysis of training records;
- visits to the various training institutions and interviews with training personnel; and
- surveys of and interviews with workers at the mill and elsewhere throughout Vietnam who received their training through the Bai Bang project.

The project faced the challenge of establishing a modern capital intensive industrial complex in an agrarian society with little experience in the implementation of large scale industrial projects. This challenge was exacerbated by the legacy of four decades or more of war, which had destroyed much of the nation’s human and physical capital. It could only be met with a massive and far-reaching capacity building effort. The extent of effort required only became fully apparent as the project proceeded.

Some SEK90.2 million (current prices) was spent on formal training activities (mill and forestry training and the vocational school component) under the project. This represented just over 3 per cent of the total project cost. Formal activities included:

- training of construction workers during the construction phase;
- substantial support for the regional Forestry Training School;
- the establishment and ongoing support of the Vocational Training School from 1983 onwards;
- transfer of knowledge training during the 1980s once the facilities became operational; and
- a technical assistance program designed to help mill management address the demands of the new style of management needed in the transition to a market economy.

However, the human resource capacity activity of the project went well beyond these formal training activities.

The later stages of the mill project (the third contract with Scanmanagement covering the period 1985–1990 and accounting for some 20 per cent of the total cost) was largely dedicated to the transfer of knowledge to equip Vietnamese management and workers with the ability to run the mill independent of external support. The key tasks during this stage were to ‘train Mill, Forestry and Procurement personnel in Management, Operation and Maintenance and to assist and support the Vietnamese Party in fulfilling optimum production targets’. And there was considerable human resource capacity building associated with activities outside of the main project components. Swedish interventions at Hai Phong port made to expedite processing of imported equipment provided much needed assistance in improving the overall functioning of port operations. And informal advice given to other mills when training activities for Bai Bang employees were being developed spread knowledge of modern mill management techniques.

## Construction training

At the peak of the construction phase some 3000 Vietnamese workers supplied by the Viet Tri Building Company and the Erection Company under the Ministry of Construction and by the Ministry of Light Industry (MOLI) were working on various aspects of the project. Although the original project agreement called for the Vietnamese authorities to supply the necessary skilled workers, most needed training in the required disciplines. By September 1978, the Swedish contractors had given formal training to some 1524 workers in skills such as welding, carpentry, plumbing, asphalt work, instrumentation, painting, and diesel engine operation (WP-System 1979). The project experienced problems in supply of workers, and a fairly common occurrence was that workers were reallocated to other activities in



the country shortly after completion of training. Scanmanagement, in their completion report said:

It also has to be mentioned that a serious educational problem throughout the investment phase was that Vietnamese personnel, once trained and prepared by the Swedes for a specific task within the organization, were frequently withdrawn from the project by their superiors when the education was over, and ordered to work elsewhere. A loss of competence and a loss of time and money was incurred as other Vietnamese had to be trained for the same task. However, Vietnam could benefit from this extensive vocational training, financed by Sweden. (Scanmanagement 1990)

## Training for forest operations

The project has provided considerable assistance to the training of forest workers. The original design of the project did not include vocational training for forest workers, because it was expected that experienced operators and mechanics would be supplied to the project. However, recognising the skills problem, Interforest started training activities at a training centre at Ham Yen, part of the Phu Tho Forestry Training School.

Sida provided financial assistance to the Phu Tho school over the period 1976 to 1992. This school, constructed by the government, was formally controlled by VPMC, but is now controlled by the Ministry of Agriculture and Rural Development (MARD).

The school provides courses in:

- plantation and harvest training;
- mechanical forestry and driver training;
- forest accounting, computer and English training; and
- forest protection training.

Each year up to 300 persons are trained in courses lasting up to two years. Graduates are employed by forest enterprises and also agricultural cooperatives, which are now engaging in plantation forestry in the six provinces that make up the raw materials area for the mill.

The Sida contribution has involved:

- the training by Swedish experts (in Sweden and as advisers in Vietnam) of teachers and managers at the school;
- support to publish 84 000 training books, which are now used by all forest training schools in Vietnam;
- the provision of training equipment; and
- the provision of Swedish advisors at the school to help build its training capacity.

In addition to the technical training provided by the school, Scanmanagement estimated that some 4000 forest workers received training in basic logging skills such as use of bowsaws and axes in the period up to 1990.

## The Vocational Training School

In the latter stages of the construction phase, the limited skills, both technical and managerial, of the workers being recruited for the mill were seen to pose a major constraint to the speedy Vietnamese takeover of the mill once it had become operational. A more concerted training effort – encompassing vocational, technical and on-the job training – was initiated.

While recruits were meant to come from within the existing paper industry, equipped with some operational knowledge of paper mills, most came from high school via Vietnamese vocational training establishments, especially the school established at Bai Bang by MOLI. This school suffered from a lack of resources, and its graduates were poorly equipped to operate at the mill and undertake the more demanding technical and special training required to become effective workers. Recognising this, it was agreed that the project would support establishment of a Vocational School directly connected to the mill.

This school (now called the Paper Industry Training School) was established under a project side agreement signed in 1983. The school was inaugurated in October 1986. The school has modern teaching facilities, well equipped workshops and laboratories, and a highly trained teaching staff (trained by northern European technical pedagogic methods).

Originally belonging to BAPACO, since 1993 the school has been jointly managed by BAPACO and the Ministry of Education and Training under VPC.

The school is meeting the vocational training needs of the Bai Bang project and the entire Vietnamese pulp and paper industry through formal training courses and seminars and workshops (box 5.1). The training school is an excellent and sustained output of the project. There is little doubt that the quality of workers in the paper industry throughout Vietnam is higher than it would have been without such a school.

Over 20 000 courses have been conducted at the school (table 5.2). The number of workers trained there is considerably less as many workers have undergone a number of training courses. About 70 per cent of long term training is now for mill workers (100 per cent in earlier years) and nearly all short term training. Skilled mill workers have often done a long degree and three or four short courses at the school. More than 70 per cent of current mill workers have undertaken multiple training courses at the school. Mill workers must complete short courses and examinations to upgrade their status and move to higher salary levels.

## 5.1 Vocational Training School: key facts

- Trains 300–400 students per year.
- Provides two year vocational training and also 70 short term training courses.
- Short term training courses cover management training, foreign language training, a production block, a maintenance block, a transport block and training for different sections in the mill.
- Important venue for national seminars and workshops on paper industry matters.
- Has become Vietnam's national paper industry training school:
  - 70 per cent of students trained for work in Bai Bang mill and
  - 30 per cent of students trained for work in other companies (list includes Hanoi Water Supply Company, Pha Rung Ship Yard, Da Nang Polytechnical University, Cogido, Thanh Son Paper Mill, Muc Son Paper Mill, Lam Son Paper Mill, Hoa Binh Paper Mill, Viet Tri Paper Mill, Lua Viet Paper Mill, Van Dien Paper Mill, Hanoi Polytechnical University, Tuyen Quang Province and Son La Province).
- School operates under a budget by the Ministry of Education and Training, but teachers are salaried employees of the mill.
- Of the current teaching staff, 13 are engineers, one is a graduate from a technical school, two are graduates from secondary schools, 11 are high school workers. Many teachers have been trained in Sweden and most have passed first class and second class pedagogic training. The 11 high school worker teachers will be trained to become engineers.
- The school has a strong physical base with most of the equipment provided under the Sida side project. This equipment covers:
  - a mini pulp and paper production line;
  - equipment for repair engineering;
  - machines for metal cutting, welding, automobile and motorcycle repair;
  - electrical equipment for civil and enterprise needs; and
  - automatic control measurement equipment.
- There is a need to upgrade some of this equipment and also expand the facilities of the school to cater for the planned expansion in Vietnam's domestic pulp and paper mill production capacity.
- The school has 105 different manuals for training – there is a need to revise and update these manuals, especially the process training document.
- Since the school was established 1158 students have graduated with a third level certificate and 360 students have graduated with a second level certificate. Trained students can go straight to work at the mill. There are two stages to the training, with one stage involving on-the-job training at the mill.
- Both men and women are trained at the school. The proportions depend on the type of training. In the process training area about 75 per cent of students are female and 25 per cent male. In the mechanical areas about 10 per cent are female and 90 per cent male. In the electrical areas 20–30 per cent are female and 70–80 per cent are male. Females have made up about 30 per cent of all students.
- As at the end of 1997, some 20,184 participants had undergone training at the school, of which 11,225 were trained during the life of the mill project.
- The school plans to expand its student intake substantially in the next few years up to about 800 students per year. They also plan to update teacher training.
- The school is regarded in Vietnam as an excellent training centre and has won many awards.

5.2 Training at the Paper Training School <sup>a</sup>			
	Before 1990	1991-97	Total
	No.	No.	No.
<b>Full-time</b>			
Process workers level 2 and 3	796	565	1 361
Mechanics, welders/repairers	246	330	576
Electrical repairs	161	218	379
<b>Short courses</b>			
Process workers	2 664	3 240	5 904
Maintenance – electrical, mechanical, instrumentation, automatic control	2 399	1 820	4 219
Other specialisations	3 213	1 674	4 887
Transfer of knowledge	275		275
Management and supervision training	1 400	883	2 283
Information/computers	0	176	176
Teacher training	71	53	124
Total	11 225	8 959	20 184

<sup>a</sup> Excludes English language training.

Source: Training school brochure.

## Transfer of knowledge

As the various components of the mill became operational, attention turned to developing Vietnamese capacity to run the mill. A series of evaluations of training and capacity building activities in 1979 and 1980 led to a revamped program and new arrangements. The main elements of the new arrangements were:

- establishing the Vocational Training School to better prepare recruits for employment at the mill;
- integration of the previously separate Swedish and Vietnamese training departments to better coordinate job instruction and theoretical training;
- use of aptitude testing to identify candidates for training;
- linking training and career planning functions;
- formulation of specific training programs for managers, superintendents and supervisors;
- emphasising training of job instructors to spearhead a systematic approach to on-the-job training;
- maintaining a strong emphasis on English language training; and
- intensive training by equipment suppliers overseas and in Vietnam.

The integrated training department trained Vietnamese workers in short courses for construction and mill operation. Activities included classroom and on-the-job training as well as special courses and study trips with the help of

Swedish educational specialists. In the nine years 1981 to 1989, some 8061 students received training in 572 courses run by the Department. From 1986 onwards, this included in-plant training for graduates from the Vocational School. Table 5.3 presents a breakdown of the training organised by the training department(s) over the period 1977 to 1996.

<b>5.3 Training results from 1977 to 1996</b>	
<b>Type of training</b>	<b>Number of participants</b>
Training for operation phase (1975–79)	309
Training for middle ranking managers	90
Training for top managers	11
Training for operators	5 895
Training for maintenance workers	4 219
Training for transport personnel	4 887
Training by knowledge transfer method	275
Training for floor level managers	2 282
Paper Industry High School training	86
On-the-job training for economists	25
Training for teachers	124
Overseas training	465
English training	1 732
Informatics training	176
Training courses for outside people <sup>a</sup>	1 260
<b>Total</b>	<b>21 836</b>

<sup>a</sup> Trainees came from the Hanoi Water Supply Company, Pha Rung shipyard, Da Nang Polytechnic University, Cogido, Thanh Son Paper Mill, Lam Son Paper Mill, Hoa Binh Paper Mill, Viet Tri Paper Mill, Lua Viet Paper Mill, Van Diem Paper Mill, Hanoi Polytechnical University, Tuyen Quang Province and Son La Province.

Source: Toi, Nghiem, Thai and Hoa (1997).

Transfer of knowledge became the primary objective of the final five year contract with Scanmanagement, from 1986 to 1990. The transfer of knowledge system developed during this phase of the project was structured around the preparation of job descriptions, identification of knowledge requirements, knowledge assessments and knowledge profiles, development and execution of individual programs, and evaluation. It encompassed three broad classes of education:

- *formal* education, such as pre-service training in full time courses, such as provided by the vocational schools;
- *non-formal* education, including pre-service and in-service part time and short duration training in courses and seminars; and
- *informal* education, unstructured learning on-the-job and through discussions with colleagues and interactions between advisors and counterparts.

In the latter stages of the project, the last of these became a critical component of the process. As the transfer process unfolded, increasing emphasis was placed on ‘process management’ issues, and the inculcation of a maintenance, repairs

and cost awareness culture. Rather than technical knowledge in the production sections, the critical gaps likely to jeopardise successful handover of the mill were found to lie in management of labour intensive support activities. And a perceived problem was that there were significant constraints on the application of what the advisers perceived to be best practice:

... shortcomings may less reflect missing knowledge on efficient management than an inability for one reason or another to apply existing knowledge. Although no one explicitly said so, it might even be that some aspects of what is seen as efficient, production promoting management in Swedish eyes may encounter cultural, social, economic or even political constraints in a Vietnamese perspective and therefore be difficult to execute (Hamilton and Hultin, 1986).

Swedish advisers considered that attitudes and behaviour could only be changed gradually through daily interactions and adviser-counterpart cooperation on the floor. Effective communication became a key issue, warranting continued emphasis on English language training, and addressing cultural awareness among advisers. (One concern expressed to Sida reviewers of the knowledge of transfer program and the performance of advisers related to cultural sensitivity – specifically criticising individuals in public (Hamilton and Hultin, 1986).)

An institutionalised transfer of knowledge system was less systematically pursued in the forestry components of the project. This was partly because training and advice, rather than addressing operational responsibilities, constituted a more central focus of the forestry support activities.

### Effects of training on mill workers

As revealed by our analysis in chapter 6, the most obvious effect of the training has been to make workers more productive, raise their wages substantially and improve their life choices and social position. This benefit is an important part of the social cost-benefit analysis in chapter 7. The result is a workforce with the depth of skills needed to operate and manage the mill facilities independently from outside advice and a capacity to continually deepen those skills to keep abreast of technical developments in the industry. Without access to trained workers the mill would not have been able to function efficiently and achieve its current profitable level of operations.

Table 5.4 records the views of workers interviewed about the value of their training. Mill workers acknowledged their better remuneration. Graduates of the training school working elsewhere in Vietnam acknowledged that their living conditions would have been worse without their training – which enabled them to obtain jobs in the state sector. The cost of failure, for most, would have been to stay on the farm.



*Each year up to 300 persons are trained in courses lasting up to two years. The vocational training school in 1994. Photo © Bror Karlsson/ PHOENIX*

## Spillover effects

The training has had two types of spillover effects:

- a direct effect from the movement of trained workers into other activities, mainly other pulp and paper mills in Vietnam; and
- an indirect effect as other enterprises emulate training and work practices carried out at Bai Bang.

As documented in the Scanmanagement (1990) report, the transfer of workers to other construction projects once they had received on-the-job training was a feature of the construction phase. Swedish construction managers at the

### 5.4 Trainee opinions about relative pay and training opportunity Percentage of responses

#### **Compared with similar workers how is your pay?**

	<b>Less</b>	<b>The same</b>	<b>A bit more</b>	<b>Much more</b>	<b>Total</b>
Bai Bang mill workers	4.7	31.1	57.5	6.7	100.0
School graduates elsewhere	54.2	37.3	8.4	0.0	100.0

#### **If you never did the training at the Bai Bang school, would your living conditions be:**

	<b>much worse</b>	<b>a bit worse</b>	<b>the same</b>	<b>better</b>	<b>total</b>
School graduates elsewhere	42.3	44.2	12.3	1.2	100.0

Source: Survey of 2546 mill workers and 164 graduates not working at the mill.

time interviewed during our research indicated that the number of such instances was large (many hundreds), though we have been unable to obtain precise estimates.

### Departed skilled workers

About 100 graduates a year from the two year training courses are currently gaining employment at the mill. Others find employment in other paper enterprises as the quality of the Bai Bang school training is highly regarded in Vietnam.

The school director estimated that about 3000 training school graduates were not working at the mill. We conducted a postal survey of these graduates. Out of 500 persons sent questionnaires, one third replied. All replies came from persons working in other paper industry state enterprises in Vietnam. Most completed only one year courses at the school, though 31 per cent were there for two years or more (table 5.5).

5.5 Details about mill graduates not working at the mill Months of training undertaken at the Bai Bang school								
	1-3	8-10	18-20	22-24	30-42	Total persons	Average monthly incomes	Average age
	Months	Months	Months	Months	Months	No.	VND	Years
Males	4	61	7	15	8	95	528 421	28
Females	5	43	5	8	8	69	474 638	24
<b>Total</b>	<b>9</b>	<b>104</b>	<b>12</b>	<b>23</b>	<b>16</b>	<b>164</b>	<b>505 671</b>	<b>27</b>

Source: Postal survey of 164 graduates not working at the mill.

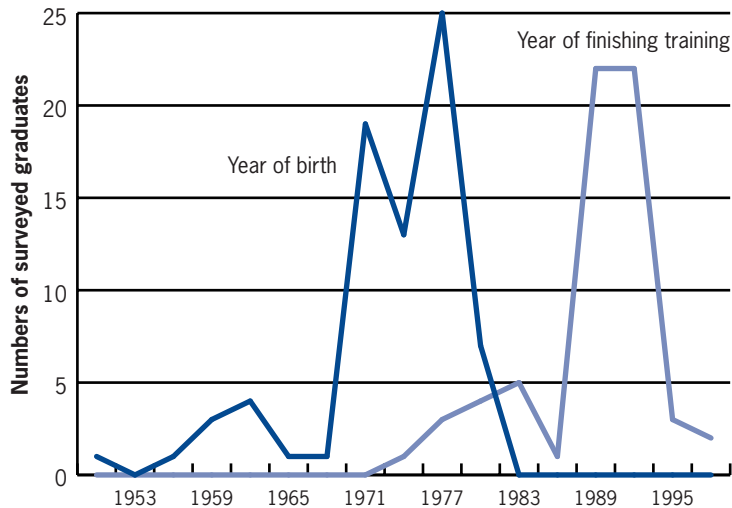
The graduates were all young, as are present day students. The Paper Training School is a vocational extension of secondary school for most full time students. Most of the workers graduated from the school during 1988-92, when they would have been only about 18 years of age (chart 5.6).

The average reported income was low compared with Bai Bang mill workers, although it varies significantly between enterprises (table 5.7). Most of the workers were from Muc Son Paper Enterprise, which, like most paper enterprises except Bai Bang, does not make a profit. Only workers from the Tan Mai Paper Company in southern Vietnam reported average incomes close to Bai Bang workers. In Vietnam state enterprise employment is lifetime employment and highly desired. Even unprofitable state enterprises can offer security and incomes well above agriculture sector alternatives. There is no active labour market in the state sector.

Workers rarely move from one state enterprise to another. Consequently, their fortunes are tied to their enterprise and if it prospers (Bai Bang) so do they. If not (all other paper enterprises) then they must accept modest salaries.



## 5.6 Frequency distributions of trainee years of birth and graduation



Data source: Postal survey of 164 graduates not working at the mill.

## 5.7 Employment and salaries of training school graduates

Name of company	Province	Number of	Average
		trainees	reported salary
		No.	VND
Muc Son Paper Enterprise	Than Hoa	106	505 189
Tan Mai Paper Company	Dong Nai	12	983 333
Viet Tri Paper Company	Phu Tho	19	393 684
Lam Son Paper Company	Thanh Hoa	17	341 176
Thanh Hoa Paper Enterprise	Thanh Hoa	7	478 571
Lua Viet Paper Company	Phu Tho	3	316 667

Source: Postal survey of 164 graduates not working at the mill.

### The Scandinavian management model

A major emphasis of the transfer of knowledge program was on how to manage a large commercially oriented industrial operation.

Under the rubric of the 'Scandinavian management model', the project introduced managers and workers to a wide range of concepts and practices used in managing and operating a similar mill in an industrialised market economy.

The main point of departure in identifying how the Scandinavian management model differed from prevailing practice in Vietnam was the concept of the role and functions of a company. Training material used by the project defined a Scandinavian company as an independent economic unit that makes its

own decisions on what to do and how to do it, inside certain general restrictions and rules. This means that the company:

- has immediate access to its own funds and customer revenues without higher approval;
- can independently decide how it uses the money and other resources at its disposal;
- is subject to strong financial constraints – the need to generate cash flows and accounting profits to guarantee survival; and
- takes responsibility for the outcomes of its decisions, with closure or takeover as a consequence of too many mistakes.

This would have contrasted very strongly with Vietnamese notions of an enterprise under the centrally planned subsidy system prevailing in the early 1980s.

The main attributes of Scandinavian management taught in the formal training sessions are as follows.

- Result orientation:
  - emphasis on quality and competence;
  - efficiency and productivity as a means of survival;
  - flexibility and ability to plan and follow up changes;
  - openness in criticism and feedback of demands as means for achieving results; and
  - approach to recruitment and delegation.
- Value orientation:
  - emphasis on values rather than outward behaviour;
  - local and individual responsibility and self control, linked to shaped goal setting; and
  - concern for equality of opportunity and fairness.
- People orientation:
  - team work as a management tool;
  - cooperation and mutual support to strengthen resource integration;
  - continuous personnel and management development;
  - focus on motivation; and
  - emphasis on negotiation before open conflicts.

While the overall orientation of the Scandinavian approach to management, with its focus on commercial viability, is common to all market economies, there are special emphases that may not be so evident in management styles and orientations in other countries. Management trainers were keen to stress management attributes and goals that went far beyond notions of ‘the bottom line’. Management training necessarily dealt with ‘mainstream’ issues of production planning, cost accounting, inventory management and

administration. But it also emphasised discussions of organisations, leadership, purposes and goals, delegation, human resources, motivation, cooperation and information, and managing change. It is possible that these emphases, and their practical application by the expatriate project personnel, made the introduction of fundamentally different approaches to the role and functions of enterprise and management more palatable to the Vietnamese.

It is clear from our analysis of social and cultural impact in chapter 6 that the Scandinavian approach to issues of personnel management left a strong impression – and legacy – on Bai Bang and its workers. The approach stressed:

- the need to ensure that promotion decisions should be driven by the needs of the job and the skills of the worker, rather than ‘friendship, kinship, sex, beauty or political beliefs’;
- the ‘negative list’ approach to responsibilities – workers should assume that a problem is their responsibility unless expressly told otherwise; and
- effective team work, emphasising participation, open definition of goals, openness to ideas, utilisation of different opinions and consensus decision making.

For much of the transfer of knowledge period the Scandinavian model was applied – to a greater or lesser degree – alongside the standard Vietnamese model. Generally speaking, internal procedures and processes (such as requisition management, costing, operational planning, training and career development) followed the Scandinavian system, while external interactions (such as reporting and financial management) followed the Vietnamese model.

However, when some of the state owned enterprise reforms began to take effect under *doi moi*, granting greater autonomy to enterprise managers and shifting measures of enterprise performance away from meeting production targets to profitability, BAPACO was uniquely placed to benefit. The implementation of *doi moi* provided a context in which the principles of the Scandinavian management model could flourish – it is doubtful if the model would have survived the departure of the advisors without the change in the external environment of the mill.

This said, the legacy of the model is evident in how BAPACO is managed today. As was noted in chapter 2, management practices in BAPACO differ quite significantly from standard practice in other state enterprises.

It is difficult to assess the extent to which the impact of the Scandinavian management model spread beyond the confines of BAPACO. Technical aspects of mill management did seem to percolate through to other enterprises. Officials from other paper mills visited BAPACO on many occasions and Swedish experts provided advice on rehabilitation and management issues to two of the larger mills – Cogido (Dong Nai) and Cogivina (Tan Mai).

It is also likely that the operation of the model at Bai Bang influenced the direction of reforms implemented under *doi moi*. Scanmanagement enlisted the support of the Central Institute for Economic Management (CIEM) in its management training efforts – and CIEM was responsible for drafting much

of the pathbreaking legislation ushering in enterprise reform in Vietnam. CIEM was organising seminars with the Swedish management consultants for managers at Bai Bang at the same time that they were drafting some of the early state owned enterprise reforms at the outset of *doi moi*.

But there is little evidence that the Scandinavian management model has had much impact on operations of the Vinh Phu Materials Company.

## Technical assistance program

The program of Swedish advisers to the mill came to an end just as Vietnam's transition to a market economy began to gather pace. Recognising the challenges that this transition would pose to the management of BAPACO, Sida agreed to fund a technical assistance program targeted at the demands of operating as a fully autonomous company responsible for operation, investments, marketing, pricing and personnel matters.

In practice, the reforms did not grant BAPACO complete autonomy in these areas, and some of the advice offered during this project was not fully acted on. A review of the project in 1994 cited, for example, reluctance of mill management to implement suggestions regarding production and cost accounting and management information systems (Chalk 1994). This response seemed to be driven by a perception that such systems were not yet appropriate to the Vietnamese system. However, it seems that as the economic reforms have progressed, and as state enterprises have been granted further autonomy and responsibilities, these suggestions have increasingly been acted upon.

## The current situation

Currently, some 45 per cent of BAPACO's 2850 strong workforce are classified as skilled and 42 per cent semiskilled. Management and administrative staff account for 12 per cent of total employment. Nearly all, if not all, of the skilled and semiskilled staff have received training – classroom, or overseas training and on-the-job training – provided by the mill and the vocational school. Some 1200 workers in other paper enterprises throughout the country are drawing on training received at the school. Thousands of forest workers are using the basic and more complex skills obtained through the Phu Tho training school and the other training activities support by the forestry component of the project.

In all, tens of thousands of workers who received training in the construction and operation phase of the mill and associated projects have benefited from the human resource capacity building activities of the Bai Bang project.

Impressive though these numbers are, they give no indication of the quality and impact of the human resource capacity building supported by the project. Inappropriate or irrelevant training does not add to people's – or the nation's – capital stock.

In a market economy some measures of the impact of this training could be assessed by identifying increments to income streams attributable to the increase in human capital. If society valued the increase in human capital, it would be reflected in higher incomes to those undertaking the investment in training. In Vietnam, however, remuneration is still only partly linked to productivity and scarcity of skills, so this kind of measure is not available. The relatively higher incomes that BAPACO employees receive is partly attributable to their skills. But some part should also be attributable to the returns that should accrue to a large stock of physical capital, or even to the effects of protection and other benefits accorded to the operation of the mill.

As well as the impact on wages, other indicators of the value of training can be obtained from:

- the assessments of the quality and relevance of the training delivered by the project, as made by professionals operating in the international forestry, pulp and paper industries; and
- the success – or otherwise – with which the mill and associated enterprises are operating.

According to both of these indicators, the project's performance ranks highly. Our technical evaluation of the mill reported in chapter 2 identified experienced management, a professionally planned plantation establishment program and a well equipped training centre among the strengths of the Bai Bang mill. A 1990 evaluation of the vocational school ranked it as one of the most cost effective and professionally organised training institutions the mission had ever seen (Wallberg and Hagman 1990).

Since the departure of the advisory team, management has implemented significant capital investments. The mill has managed to reach, and exceed, its technical production capacity of paper. Advisors visiting the mill in 1997 observed that it is much better run now than when the advisors were present.

In addition, there is evidence (albeit rather indirect) of spillovers from the human resource development activities. Training during the construction phase of the project clearly had an impact on the nation's reconstruction effort, as skilled workers were taken from the site to work in other projects around the country. The same thing happened with road building and transport operators trained under the forestry component of the project.

Workers and managers trained in mill operations were transferred to other pulp and paper enterprises around the country, adding to the workers and managers from these enterprises that received training at Bai Bang facilities. Indeed, some senior Vietnamese officials indicate that a key objective for having the project was to access Swedish technological skills for the country as a whole, rather than just the mill and forestry.

It is also clear that training and exposure to the Scandinavian management model influenced attitudes towards management in key training, research and policy making institutions that played a major role in the formulation of the economic and state enterprise reforms.

# 6 Social and cultural impact

The project has delivered a substantial and sustained improvement in the living standards of mill and forestry workers – higher incomes and improved access to consumer goods, improved health, housing, transport, education and training opportunities, and a richer cultural life. The benefits have been achieved without adding to social problems. Both Kinh and ethnic minorities have shared in the benefits. But the number of beneficiaries is small in relation to the region's population. The most enduring Swedish influence is a showcase Western style management system at the mill, and trust and openness among management and workers in dealing with outsiders.

HOW HAS THE PROJECT AFFECTED THE LIVES of people in the provinces? How have these people viewed the social and cultural changes that have taken place – through changes in living conditions and through the Swedish influence? Have there been conflicts between the project's objectives and the concerns of local people about their cultural values, livelihood strategies and customs?

We conducted a series of surveys, interviews and focus group discussions with mill and forest workers and their families to pursue these questions. Our methodology and detailed findings are set out in appendixes 6A and 6B. We review the findings first for mill workers at Phong Chau then for forest workers and farmers in the mill's wood supply regions.

In the early 1970s when the project was being negotiated, the raw materials area initially assigned to the mill had a population of around 85 000 people, living mainly from farming. A significant proportion were ethnic minorities relying on slash and burn agriculture for daily subsistence. Health conditions for these people were poor. There was widespread malnutrition and diseases associated with inadequate and insufficient diets. And families had a lack of cash to pay for treatment and medicines. As a result, the life expectancy of mountain peoples was low relative to Kinh.

Continuous campaigns had been conducted in the region to promote sedentary farming from shifting cultivation. These were only partially successful. Government sponsored resettlement of large numbers of Kinh from the high

population density Red River Delta began in the highlands in the early 1960s. This resettlement was on a sufficient scale to significantly alter the demographic balance of the uplands by the time of the project.

There does not appear to have been much thought given in the design of the Bai Bang project to how it would affect the people of the mountain regions, though it was recognised that the planting of plantations and management of natural forests would clash with traditional lifestyles. Nor was there a clear statement of what the project should contribute to the living conditions and lifestyles of the mountain people.

Despite this, the social and cultural impact of the project has been of considerable ongoing interest since production commenced at the mill. Controversy surrounding the project was heightened upon release of the Larsson and Birgegård (1985) study, which drew attention to the poor living conditions for forest workers. That study was primarily concerned with how to improve the then inadequate and irregular supply of logs to the mill. It identified the very low and irregular incomes of forest workers and their appalling living conditions as the principle reasons. Inadequate housing, severe health problems and social problems arising from the persistence of a demographic pattern of high numbers of single women and unmarried mothers were highlighted.

In addition to concerns at the time about the poor living and working conditions of workers, concerns were also being expressed that ethnic minorities may have been further marginalised socially and economically as a result of the presence of the mill.

A 1985 study (Sevefjord) focused on the impact of the project upon women working at the mill. She found that women were disadvantaged in numerous ways; through lack of training, employment clustering in manual and childcare work, and a lack of involvement of women in decision making processes. The study also revealed the low living standards of workers, low quality housing and inadequate and unhealthy childcare facilities.

Follow up reports on the situation of forest workers were commissioned in 1986 and 1987. Bostrand's 1986 report concluded that some improvements had occurred. In particular, families had been encouraged to settle in the forest areas. Workers stated they liked working in the forests because they could save money and have some land (unlike other workers in state enterprises). Although working hours were the same as they were in 1984, there were new and better houses being built, the furniture was better, and there was an improvement in food self-sufficiency. Nevertheless, respondents still complained about difficult working conditions, poor childcare facilities, lack of electricity and a dearth of cultural activities.

Liljeström's study (1987b) revealed that in forest brigades there was a demographic pattern in which women predominated with many women as the single-head of households. She also reported on the low standard of living, inadequate diet, poor health and early retirement of workers.

In response to the above reports, Sida undertook to improve the situation for workers, and instituted numerous programs to reverse the situation, particularly for women workers. We re-examined each of the areas of previous concern with a focus on the present social and economic position of women workers, ethnic minorities and forest brigade workers.

The harsh working and living conditions of most workers in the 1980s were retold to us during our fieldwork.

Each meal consisted of just two bowls of glutinous rice served with bitter bamboo sprouts soup. Workers had no proper accommodation. They had to spend the night in a tent put up by the side of a stream or ask for lodging at a local house.

## The Phong Chau district today

What was Vinh Phu province was split into two new provinces in 1997 – Vinh Phuc and Phu Tho (the mill falls in Phu Tho). The Phong Chau district surrounding the mill is one of nine districts in the new Phu Tho province. There would have been minimal development in the district without the presence of the mill. Only 20 years ago about 90 per cent of Phong Chau houses were cottages with thatch roofs and mud walls (table 6.1). The population of the immediate district at the time was very small.

6.1 Population and income						
	Population		Persons per square kilometre	Food per capita <sup>a</sup>	Paddy yield	GDP per capita
	1995	1997	1997	1995	1995	1997
	No.	No.	No.	kg	Quintal/ha	US\$
<i>Vinh Phu</i>	2 329 646	1 100 000	802	226.0	28.2	
<i>Phu Tho</i>		1 250 000	362			192
<i>Ha Bac</i>	2 675 705			272.9	28.5	
<i>Son La</i>	865 914			221.5	22.8	
<i>Hoa Binh</i>	747 171	744 000	158	229.8	29.6	190
<i>Tuyen Quang</i>	657 111	657 000	113	265.1	33.2	250
<i>Yen Bai</i>	698 379	671 000	101	234.4	31.4	130
<i>Bac Thai</i>	1 254 045			228.7	29.8	
<i>Ha Noi</i>	2 424 274	2 300 000	2 519	96.4	31.6	695

<sup>a</sup>Gross output of food converted into paddy per capital. Note: Provinces in italics border Phu Tho province.

Source: General Statistics Office (1996); *Vietnam Economic Times* (January 1998).

It was desperately poor like most of northern Vietnam. Today, however, Phong Chau district stands out as a pocket of wealth in what remains a relatively poor province (table 6.2).



6.2 Percentage of brick dwellings in Phong Chau district							
	1970	1976	1980	1985	1990	1995	1997
	%	%	%	%	%	%	%
Brick dwellings	3.58	7.49	14.98	31.60	50.16	70.03	79.48

Source: Local government statistics.

The state enterprise sector employs nearly 8 per cent of workers in Phong Chau district – more than double the provincial average – and largely because of the mill. About half of the district population are employed in agriculture, with each agricultural worker growing about half a tonne of rice per year. There are several hundred small businesses in Phong Chau township selling foodstuffs and offering services such as repairing and tailoring.

Migration from the overpopulated Red River Delta has been a persistent feature of northern society for centuries. The construction of the mill and associated infrastructure brought many migrants to the region and significantly improved their income prospects. More than 80 per cent of the present workers were born in the local province (table 6.3).

6.3 Place of birth of mill workers		
	No.	%
Northern mountains and midlands		
• Phu Tho province	1 925	77.6
• Vinh Phuc province	114	4.6
• Other provinces	78	3.1
Red River Delta region	246	9.9
North Central Coast	116	4.7
Rest of Vietnam	1	0.0
<b>Total</b>	<b>2 480</b>	

Source: Survey of 2546 full time mill workers.

The presence of migrants from elsewhere in Vietnam is a common feature of the northern Vietnamese midlands and mountainous societies and the population is well adjusted to the experience of being uprooted. There are no obvious social problems as a result of this internal displacement. Our interviews in Bai Bang and in the north-western provinces of Yen Bai and Tuyen Quang revealed that those who have migrated, rather than being concerned about having left their home villages, perceive their move as a desirable one that in most cases led to domestic stability and economic security.

From the mid-1980s onwards there have been substantial economic and social benefits for mill workers and the township due to a combination of factors, which include deliberate policies of management to enrich the social and material lives of workers. Business start ups in Phong Chau surged after the economic reforms of 1989, which expanded opportunities for private household enterprises and substantially improved living standards.

The provincial data illustrates the limited industrialisation of Vinh Phu province. Bai Bang mill, which employs less than 3000 people directly, cannot therefore be expected to significantly influence the economic development of the entire province. Despite the mill being the focus for state industrialisation in the northern areas, Vinh Phu remains among the poorest provinces in Vietnam. Vinh Phu also does not stand out in terms of social indicators such as in health facilities, number of teachers and education levels.

### Living standards of mill workers and their families in Phong Chau township

The mill workforce is prosperous – job security, training programs, attractive housing, social welfare initiatives, cultural and sporting activities and incomes much higher than the provincial average and the average for state owned enterprises. Average wages including productivity-linked bonuses are over VND1 million per month, which is about double the average for state owned enterprises.

Our surveys revealed that all but a few worker homes were of brick construction with an average of three rooms per house. About one quarter of worker homes had two stories. The average block of land for their houses was 60 square metres, although this average is biased due to a small number of households having large gardens. Almost two thirds of worker households reported having a garden of some size – 6 per cent reporting gardens of 500 square metres or more and 33 per cent reporting gardens of up to 100 square metres. Household gardens generally provided only a modest supplement to income earned at the mill.

The mill is not burdened with a large proportion of elderly workers as in many state enterprises. State enterprise employment in Vietnam is typically for life. It is also highly desired employment. Consequently, state enterprise managers are stuck with the workforce that was recruited when the enterprise began operations – with a uniformly youthful workforce becoming uniformly aged over time. This demographic ‘hill’ is evident from the age frequency distribution of Bai Bang workers – although, as most were only recruited about 15 years ago, they are now in their late 30s. In fact, 37 per cent of the mill workforce is between 38 and 42 years of age. The expansion of capacity in recent years has also enabled a gradual increase in employment of young workers and now workers under 33 years of age constitute 17 per cent of the mill workforce. The mill is able to provide jobs for up to 100 training school graduates each year.

In our interviews and focus group discussions workers repeatedly expressed a sense of pride and achievement in being associated with the Bai Bang project. The perceived success of the mill has also resulted in a high level of loyalty to BAPACO. Mill workers and inhabitants of the town all expressed a sense of hope about their futures.

The inhabitants of the township have directly benefited financially from the mill’s presence, but also have access to improved health care, education, and

social and cultural activities provided to the district. About 80 per cent of local business sales may be attributed directly or indirectly to the mill or indirectly to mill generated demand.

The high level of prosperity of workers and the district is a recent phenomenon. In the construction phase of the project Vietnamese workers were very poorly paid. It was not until the economic reforms of 1989 that the mill was able to grasp economic opportunities, increase output and reap benefits for itself and its workers. In the 1980s mill workers were not much better off than average state enterprise workers (which was still a much higher standard of living than farmers). Workers today generally report that they are comparatively better off than other similar workers (table 6.4) and that their living standards relative to the average in Vietnam are increasing.

<b>6.4 Worker and manager opinions about relative pay and opportunity costs</b>					
<b>Compared with similar workers, how is your pay?</b>					
	<b>Less</b>	<b>The same</b>	<b>A bit more</b>	<b>Much more</b>	<b>Total responses</b>
Workers	118	764	1 424	161	2 467
Managers	2	24	36	8	70
<b>Total</b>	<b>120</b>	<b>788</b>	<b>1 460</b>	<b>169</b>	<b>2 537</b>
<b>If you never worked at the mill, would your living conditions be:</b>					
	<b>Much worse</b>	<b>A bit worse</b>	<b>The same</b>	<b>Better</b>	<b>Total responses</b>
Workers	297	1 351	765	36	2 449
Managers	7	39	24	0	70
<b>Total</b>	<b>304</b>	<b>1 390</b>	<b>789</b>	<b>36</b>	<b>2 519</b>

Source: Survey of 2546 full time mill workers.

Satisfaction about employment at the mill was also reflected in the aspirations of mill workers for their children. Some 83 per cent of workers surveyed wanted their children to get jobs at the mill. Managers had higher aspirations for their children. They were divided in their desire for their children to work at the mill or to pursue careers in Hanoi.

### Township businesses

Of the 211 Phong Chau township businesses we surveyed (80 per cent of the total), 63 per cent were selling goods and foodstuffs with the remainder offering services such as repairs, sewing and hairdressing. Almost all were small scale family businesses with 78 per cent of owners living in the same dwelling. Employment was shared between household members. Township businesses were sharing in the mill's prosperity. About 80 per cent of their sales were attributable directly or indirectly to expenditure by mill workers. Average turnover was about VND8 million per month, average profits about VND2.2 million per month and average tax payments about VND130 000 per year. Most business persons wanted their children to get jobs at the mill.

Household ownership of assets was higher than for mill workers (table 6.5).

6.5 Local business and mill worker asset ownership ratios				
Percentages of households with these assets				
	<b>Motorbikes</b>	<b>Colour televisions</b>	<b>Refrigerators</b>	<b>Video players</b>
	%	%	%	%
Mill workers	63	74	19	8
Local businesses	71	94	32	27

Source: Results from survey of 2546 full time mill workers and 211 local businesses.

### Social differentiation among mill workers

Social and economic differentiation has intensified over time. Mill managers have become a wealthy elite with many obvious material benefits from their employment (such as new cars and spacious housing). But the general improvements to regional living standards, the power of workers to influence the decision-making processes of the mill, and the social stability of the district have offset any tensions that may have arisen because of social and economic differentiation.

The economic prosperity of the district has led to a politically stable situation in which workers, managers and local party officials work constructively together to make economic and social reforms – although these are limited by the overall political system. Political differentiation has not been intensified by the presence of the mill as the disadvantaged and less powerful groups (such as women and ethnic minorities) have significantly benefited from the consensual reforms.

### Education and training of mill workers

Education is highly valued in Vietnam and provides opportunities for social mobility. In the case of those trained at the mill, the opportunity to gain skills and improve their English has given many individuals increased job prospects and occasionally even allowed them to travel overseas for mill-related business.

The beneficiaries of the Bai Bang project include those who went through the Paper Training School (box 6.6). This school was officially founded in 1986, although formal training for mill workers has been ongoing since the 1970s. The school maintains about 300 to 400 full time students each year, some doing the two year course to become certified skilled workers and others doing a single year or less for lower degrees. About one third of students are women. According to the director, about 100 graduates gain jobs at the mill each year. The others generally find employment in other paper enterprises as the quality of school training is highly regarded in Vietnam.

For those who have sought employment elsewhere in Vietnam, having had training at the mill has given them a significant advantage in job procurement

## 6.6 The Vocational Training School

The school is active and well managed. The buildings are clean and the machinery well maintained. The school is overflowing with lively and enthusiastic young students. English language lessons are taught, as well as numerous specific courses for mill workers such as how to use the computer software programs.

The accommodation and school facilities are excellent. The student housing consists of brick and tile houses. Rooms are equipped with electric fans, vacuum flasks and desks. The water and power supply is reliable. Infrastructure facilities such as classrooms, laboratories, library, etc. are convenient for learning and teaching. There are playgrounds for volleyball, badminton and gymnastics.

We had informal interviews with some students studying electrical engineering, mechanics, welding and motor repair who are not relatives to employees of the paper industry. They were happy about the studying and living conditions at the school because the training was done in a systematic manner. However, they all commented that the equipment in these laboratories was produced in the 1970s and 1980s and is out of date.

over others. Training at Bai Bang is held in high regard and Bai Bang graduates enjoy high incomes (table 6.7).

## 6.7 Incomes and assets of Bai Bang workers and training school graduates

	Average incomes	Rooms in dwelling	Dwelling size	Assets per 100 households			
				Bicycles	Motor-bikes	Colour televisions	Video players
	VND	No.	m <sup>2</sup>	No.	No.	No.	No.
Bai Bang workers	770 414	2.98	55.9	84	63	74	8
Graduates working elsewhere	505 671	2.32	47.8	85	10	29	2

Source: Survey of 2546 full time mill workers and 164 training school graduates working elsewhere.

A number of workers commented that the training provided by the mill significantly improved their life choices and social position. Some also mentioned that there needs to be more emphasis upon developing diverse training beyond the mill's needs so that the impact of training can extend to more people.

## Access to consumer goods by mill workers and their families

In the 1980s food shortages and difficulties in obtaining consumer items were major concerns at Bai Bang and throughout Vietnam. Food productivity in the region and throughout the country has increased markedly since the move to a market economy, and food availability is no longer an issue.

There has been a big increase in the number of motorbikes and televisions in the province. About three-quarters of workers reported having colour

televisions, although few had video players. Manager households not surprisingly reported higher rates of more valued assets with lower rates of bicycles and black and white televisions. The official data for Phong Chau district in 1997 shows very low motorbike ownership rates which reflects the fact that the majority of district workers are farmers who would have little more than a bicycle (table 6.8).

6.8 Asset ownership by mill households						
Assets	Number of households	Average year of purchase	Percentage of such assets in:		LSMS urban areas data	Phong Chau district
			Worker households	Management households	1993	1997
	No.	Year	%	%	%	%
Bicycle	2 148	1986	13.6	12.1		15.2
Motorbike	1 614	1994	62.3	88.6	36	14.7
Black and white television	281	1991	11.3	0	51	38
Colour television	1 889	1994	73.5	100.0		
Refrigerator	494	1993	18.6	47.1	18	3
Video player	207	1994	7.4	32.9	14	4

Source: Survey of 2546 mill workers and General Statistics Office.

*Living room of Bai Bang worker in the Phong Chau township.  
Photo A. Berlin.*

The rise in the number of motorbikes has led to greater mobility and exposure to the world beyond the district. Television has also had a big impact providing entertainment and educational value.



## Health of mill workers and their families

There are continued occupational health hazards at the mill associated with high temperatures, noise and dust (box 6.9).

### 6.9 Occupational health hazards at the mill

Some workers said that working conditions in earlier years were far from satisfactory. The workplace was subjected to high temperatures, noise, paint dust and chemical smells. Most workers suffered from diseases such as sore throat, asthma, ear-nose-throat problems and chemical allergies. The incidence of these diseases has been reduced considerably. In recent years, more attention has been paid to the working conditions of workers. For example, previously the pulp and collection workshops were equipped with airconditioners, but not air ventilators. As a result, it was always hot and suffocating inside the workshops. In recent years, a network of ventilation has now been put in place and airconditioners have been put outside. Workers feel much more comfortable during their working hours. However, the problems have not been entirely alleviated.

Table 6.10 indicates the high number of respiratory illnesses in Phong Chau. A comparison with the Vietnam-wide figures is difficult to make, as it is impossible to determine how these health indicators were measured. Smoking in Vietnam is so widespread (more than 80 per cent of adult males smoke) that it is difficult to calculate how much the Vietnam-wide figures on respiratory illnesses are affected by it. In Phong Chau the incidence of smoking is not known. Nevertheless, the mill clinic informed us of the high rate of respiratory illnesses as did numerous workers and the local People's Committee.

### 6.10 Incidence of diseases and illnesses in Phong Chau

<b>Illnesses</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>
	No.	No.	No.
Infectious disease and parasitosis	284	440	414
Tumor disease	18	21	34
Hematopoietic/blood forming organ disease	5	24	73
Endocrine disease	2	12	5
Psychiatric disease	11	24	18
Neuro disease	19	45	50
Facial disease	41	48	66
Ear disease	116	120	148
Cardiovascular disease	164	304	401
Respiratory tract disease	1 013	1 468	1 500
Digestive disease	547	604	823
Skin and subcutaneous disease	64	98	112
Osteo-myo-arthro disease	117	126	248
Urogenital disease	22	64	92
Intoxication and accident injuries	124	134	276

Source: Phong Chau District People's Committee.

Interviews with workers at the mill revealed that the company has made special efforts in primary healthcare for women and children. The company's medical section has undertaken immunization for children and expectant mothers. As a result, in recent years the number of women absent from work to look after sick children has been considerably reduced. Since 1992 kindergartens and crèches have been upgraded. The kindergarten and crèche attendants have been trained and retrained to raise their proficiency. For three years running, the kindergarten of the Bai Bang Paper Company was recognised as being in the vanguard of preschool education by the Vinh Phu Provincial Education Department.

### Women employed at the mill

The mill employs three men for every two women (table 6.11). Despite the egalitarian ethos of management, the power of the Women's Union and the socialist ideology of equality for women, only 24 percent (17 persons out of 70) of the managers are women. 'Managers' in this context include deputy department heads and above. Almost all the most senior management positions were men, although there were some female department heads. While 76 percent of the managers were members of the Communist Party, only 12 percent of workers were members.

6.11 Mill workers by gender and Communist Party membership					
	Number of persons	Party members			Average monthly incomes
		Yes	No	Unspecified	
	No.	No.	No.	No.	No.
<b>Workers</b>					
Female	1 030	67	855	108	707 000
Male	1 516	223	1 127	166	754 000
<b>Managers</b>					
Female	17	12	5	0	1 473 000
Male	53	41	10	2	1 781 000
<b>Total</b>	<b>2 546</b>	<b>343</b>	<b>1 997</b>	<b>276</b>	<b>781 896</b>

Source: Survey of 2546 full time mill workers.

Although there is no active discrimination against women, women at the mill and at VPMC are at a disadvantage in employment and promotion opportunities. The bulk of the female workforce remains in the unskilled area. Much recent research indicates that women throughout Vietnam have not benefited from *doi moi* as much as men mostly because of the influence of a Confucian ideology in which a strict hierarchy based upon gender and age have placed women in consistently inferior positions.



Average incomes for women workers and managers are less than for men. This reflects differences in skill composition as wages for men and women are the same for each job classification. In the recent shedding of jobs in direct production activity within VPMC, women bore the brunt of retrenchments at a ratio of 4.6:1. Women have benefited from all the changes that have taken place at the mill since 1974, but to a lesser degree than their male counterparts.

Women cite fewer employment and training opportunities and lower incomes as their major concerns. Nevertheless, most women commented that they were very hopeful when thinking of their economic and political futures and felt that great strides had already been taken in their push for equality in the workplace.

### Ethnic minorities at the mill

Ethnic minorities constitute only 0.2 per cent of the Phong Chau district population. This has not altered considerably over the last two decades (table 6.12). The area was largely Kinh before 1979. It appears that, in Phong Chau, the small numbers of non-Kinh have been integrated into the wider community for some time. The impact of the project on the ethnic minorities in Phong Chau is therefore not an issue.

6.12 Ethnic origins of Phong Chau district population		
	1 October 1979	1 April 1989
	No.	No.
Kinh	160 375	205 236
Tay	98	130
Muong	72	85
Han	31	1
Nung	30	8
Cao lan	19	0
San chay	16	23
Thai	0	5
Others	26	51
<b>Total</b>	<b>160 667</b>	<b>205 539</b>

Source: General Statistics Office.

## The situation for forest workers and farmers

In the 1970s increasing food demands from high population pressures and the need for wood led to expanded clearing and cultivation in upland areas. The result was extensive environmentally damaging deforestation in many of the provinces now supplying wood to the mill. But over the last two decades the northwest region of Vietnam has been environmentally and economically transformed through forestry projects to provide logs for the mill and other enterprises.

## Afforestation

Through regional educational projects farmers have been made aware of the benefits of growing trees, and many have invested in forest planting and hill cultivation with the assistance of local forestry programs (box 6.13). The Forestry Cooperation Program between Vietnam and Sweden has made an important contribution to afforestation while significantly improving the welfare of farmers in the region.

### 6.13 Forest cover is increasing in some areas

The Director of Yen Son Forest Enterprise, Mr Ngo Duy Dan, said that previously the provincial forest cover was 30 per cent, now nearly 60 per cent, the forested area managed by the enterprise is 95 per cent and the cover area of five communes under the enterprise's control is 65 per cent. Before the project, it was only 45 per cent. In Yen Bai, the provincial forest cover is 32 per cent and for the raw material forest enterprises, the area is over 60 per cent.

Through afforestation soil erosion problems have decreased in all the provinces providing raw materials. Tree planting throughout the northwest has attracted labour from elsewhere in the country and continues to be regarded as an attractive supplement to other farming. The social benefits have been to provide employment and to increase income levels, and the work is viewed as personally satisfying.

Would afforestation have occurred without the mill? Forestry products are used for numerous commercial purposes other than for paper pulp and so the development of forests became an important economic policy of both the national and local governments. And soil erosion and associated loss of moisture had been a concern of many policymakers in the region as it was having a negative impact upon agricultural productivity. The presence of the mill, by creating a clear commercial value for logs, has been the catalyst for the vast replanting of bare hillsides that has occurred over the past decade. This tree planting is now also delivering substantial agricultural benefits through retention of water in upland areas, allowing the growing of paddy rice and horticultural activities. The result is more secure rural enterprises built around a mixture of commercial trees, upland rice, horticulture and livestock. But the mill was not the only reason for the successful and widespread afforestation.

## Land allocation for forest growing

With the land allocation reforms forest enterprises have assigned land to worker households and entered into revenue sharing contracts between the household and enterprise (box 6.14). Allocating land, and contracting afforestation and forest protection to households has provided them with strong incentives to succeed.

There is evidence that some workers resisted being allocated land and that some who were allocated land have handed it back to the forest enterprises



*Ethnic minorities constitute only 0.2 per cent of the Phong Chau district's population. This percentage has been quite constant over time. Above girl coming from hillside plantation in the Tuyen Quang province.  
Photo: D. Vincent.*

#### 6.14 Log growing arrangements

Workers for the forest enterprises know that they can sell logs to the Bai Bang mill. There are several models of planting. One model involves paying people so many dong per year to plant and look after the trees then, upon harvest, all of the proceeds go to the forest enterprise which does the harvesting. The second model shares the investment in trees – 50 per cent to the forest enterprise and 50 per cent to the farmer – and splits the proceeds at harvest 50/50. At harvest, the forest enterprise helps the farmer sell his product. In all cases the forest enterprise provides guidance for the farmers. Local people like to cooperate with the forest enterprise on the 50/50 rule.

Tuyen Quang province

for management and protection. It is only since 1995 that land ownership has been popularised in some areas.

#### Living standards of forest workers and their families

All persons interviewed acknowledged that their living standards had increased sharply in recent years. Assistance programs and policy reforms (especially the handing back of land for tree growing to households) were viewed as important contributors.

Worker living standards have greatly improved due to better working and living conditions. During the Swedish project, each brigade had only four buffaloes managed by the enterprise. Now each enterprise has its own buffalo. Before 1990 the whole brigade had only three black and white television sets. Now 21 of the 26 households have television and many of them are colour. (*Head of Brigade 17, Viet Huong Forest Enterprise*)

Improvements in the situation of one forest enterprise are described in box 6.15.

#### 6.15 The Ham Yen Forest Enterprise

The enterprise consists of eight brigades employing 208 workers of which 125 are women. There are 25 administrative personnel, 11 women looking after children and 172 persons working in the forest.

The local land area is about 22 000 hectares of which 4061 hectares belongs to the forest enterprise and the rest to local communities. Each year the enterprise plants about 250 hectares of trees. The annual harvest for Bai Bang is 150 hectares. In 1997 only 71 hectares were harvested for Bai Bang, as the mill did not want to purchase any more trees.

In addition to tree planting on forest enterprise land, there is now considerable planting on other land. There are several models of planting. One model involves paying people an agreed amount per year to plant and look after the trees. Upon harvest all of the proceeds go to the forest enterprise that does the harvesting. A second model shares the investment in trees 50:50 between farmer and forest enterprise, and shares the proceeds 50:50.

The enterprise makes the land available to households who can involve all family members in the planting and caring process. Considerable support is provided to farmers through forestry programs for seedlings and extension services. As well as sharing in the log proceeds, workers also get access to firewood. In addition to the permanent workers, about 200–300 labourers are hired for part time jobs, which injects money into the farming system.

Average wages of forest workers have increased from VND320 000 per month in 1996 to VND405 000 per month in 1997 – considerably more than the earnings of local farmers not growing trees.

One hundred and fifty-three families have their own separate houses. Seventy houses are brick with tiled roofs and cement floors, and 59 houses have roofs of thatch. Fifty-one households have a motor bike and 75 have television.

The forest enterprise makes a small profit, which it invests in cultural activities, sporting activities and trips for workers.

Because of the mill's demand for logs, paid employment has been created for large numbers of workers in the area who would otherwise be engaged in farming. The road system has been greatly improved (45 kilometres of road for cars and 107 kilometres of road for forest access), as has housing and community infrastructure.

In a study of the living condition program for forest workers, Thi and Bendz (1993) found improvements in the supply of electricity, housing (especially for single mothers) and kindergartens. The development of home gardens was

#### 6.16 Worker salaries in Ham Yen Forest Enterprise

<b>Year</b>	<b>Monthly salary</b> VND
1990	25 000
1991	32 000
1992	89 930
1993	83 000
1994	128 000
1995	271 487
1996	332 000
1997	405 000

Source: Forest enterprise records.

also noted. All the households interviewed by us in early 1998 acknowledged these improvements, but emphasised the importance of their being able to develop agroforestry and the assistance they have received to grow trees through credit and knowledge transfer.

The salaries paid by forest enterprises have increased sharply over the 1990s (table 6.16). However, as shown in chapter 4, they are well below the salaries received by mill workers.

The rapid increase in worker salaries has been accompanied by a sharp decline in the numbers employed in forest enterprises. Income from land ownership through cultivation of crops such as tea and rice, the development of gardens for vegetables and fruit trees, and through animal husbandry and fishponds has added to the incomes of forest workers. Income from the household economy now accounts for 40–50 per cent of total household incomes.

#### 6.17 Advances in hospital care

Hospitals were built in project areas such as a clinic in Bac Quang and a spa house in Ham Yen. And since 1990, clinics in Yen Son have been upgraded into a regional hospital. The hospital has 30 beds and provides medical treatment and check ups not only for workers and their children, but also for the population in seven communes in the region, including ethnic people. Each forest worker has a health insurance book. When they are sick, they are provided with free treatment and check-ups at the enterprise clinics or hospitals. Women workers interviewed said they were given regular prenatal check ups and had access to maternal leave as stipulated by law (previously six months, but four months from now on).

#### Health of forest workers

Our interviews and group discussions revealed that the project supported healthcare programs which have improved the health of both male and female workers, but especially females – particularly in the areas of primary healthcare and family planning (box 6.17).

All female workers interviewed said that their health and working conditions had improved. The enterprises provide free health care to workers. But health

concerns remain because of the heavy nature of the work – carrying young plants uphill, digging holes, and crossing streams to cultivate and protect forests.

As a consequence, women workers suffer from illnesses such as rheumatism, joint pains, gynaecological complaints and sore eyes. Regulations set out for female workers specify the retirement age of 40 or 45 (which is about 10 to 15 years younger than normal standards as defined by the Labour Code). Female workers also commented that due to the heavy work required of forestry workers, even male workers should retire about ten years earlier than normal standards. The poor occupational health status of women forest workers remains a significant blight on the otherwise substantial improvements in living standards.

### Forest worker housing

Workers recalled their living conditions a decade ago in single family room apartment complexes. Separate houses for worker families are now the norm. They have tiled roofs and are of wooden or brick construction. By contrast, the bulk of farmers in the region still live in thatched cottages. Forest enterprises have provided financial support (through loans) to workers to build their own houses. Housing standards are, however, considerably below those enjoyed by mill workers and their families.

### Transport in the forest regions

The northwest region presents particularly difficult conditions for communications and transport due to the terrain (Donovan et. al. 1997, pp. 22–4). Today, not all villages can be reached by road. The roads from the enterprises to the forest brigades have been substantially improved in recent years. The project has helped upgrade the main highways – for example, the portions from Vinh Phu to Ha Giang and Vinh Phu to Lao Cai – and helped forestry enterprises open many inter-roads linking the headquarters of the enterprises with brigades and from brigades to planting sites. The inter-roads of forestry enterprises have been not only very useful for afforestation and forest exploitation, but also economic and cultural exchanges between local villages. Workers frequently mentioned the benefits to them of reduced travelling times.

### Education and training opportunities for forest workers and their families

Many workers commented that Sida projects had previously provided funding for childcare facilities and schools. Increasing population in these provinces, and the ageing of the buildings and educational resources, means that ongoing funding is essential to maintain the standard of the original facilities. Many childcare facilities and kindergartens are now shabby, overcrowded, under-resourced and suffer from a shortage of qualified staff who are poorly paid. Enterprises have sought funding to upgrade facilities.

Our interviews revealed that farmers (including ethnic minority people) have been given training courses in their communities. Trainers are not only those from the agricultural extension centres, but also from local hamlets and villages. However, there remain few educational and training opportunities for youth in these areas. Education and training opportunities are much better for mill workers and their families.

A 1994 survey (Nguyen, Nguyen and Huynh 1995, p.10) in the forestry development area supplying Bai Bang with logs revealed that women are given very few opportunities to make decisions, and to learn new technologies. This accords with our findings.

### Cultural life of forest workers

The forest enterprises make a small profit, which they invest in cultural activities, sporting activities and trips for workers. The supply of consumer goods as well as newspapers and magazines to the mountainous areas is still irregular, but it is a vast improvement from the situation previously. This reflects not only higher incomes, but also the changes that have taken place throughout Vietnam. As one informant reported, 'In the 1970s and 1980s, even if we had money to spend, there was nothing available to buy'. Television relay transmitters in the region have been widely established and television has proved enormously popular.

The lack of a permanent power supply remains a problem in log supply regions. The project provided power generators and electrical devices. Most were still in operation. Several brigades had generators that did not operate and many households still had to resort to oil lamps when there was no water in the streams to generate hydropower. Houses with televisions often use batteries to power them.

Despite the big improvement relative to the situation in earlier years, the cultural opportunities for forest workers and their families are considerably more limited than those for mill workers and their families.

### Social differentiation among forest workers

Some forest workers reported increasing social differentiation between households in the region. Forestry workers in all areas are significantly better off than private farmers. They have regular incomes from forest enterprise employment and have benefited from a series of projects to improve their housing and health. Many in the northern provinces see working in forest enterprises as a good job and it is easy to recruit workers. And farmers receive less for their trees than the forest enterprises – the reason being that trees grown by farmers are dispersed as buyers must go to different places to collect them.

Farmers in Vietnam are the poorest and most populous group. With or without the mill, private farmers will continue to experience economic hardship and

poverty among farmers in the provinces of the raw material area remains widespread.

With the advent of private forestry, social differentiation is also emerging between households within forest enterprises. And our interviews revealed considerable sensitivity among forest workers to the large gap between their incomes and those of mill workers (box 6.18).

#### 6.18 Forest enterprise worker views of their parity with mill workers

Workers at Brigade 203 said that, for all the improvement in their living standards, their monthly income was much lower than that of the workers at Bai Bang Paper Company. They said that the average monthly income of workers at Brigade 203 was VND315 000 while that of the Bai Bang Paper Company's workers was over VND1 million or three times higher. Workers of Brigade 203 were only awarded the 13th month's salary as a bonus while workers at Bai Bang Paper Company were rewarded both in cash and in kind (such as televisions or radio sets). The housing situation of Bai Bang's workers is much more comfortable than that of brigades. Workers at Bai Bang worked only eight hours a day while workers at Brigade 203 had to work ten hours a day and to be at work from dawn to dusk. Worse still, workers at Brigade 203 did not have access to a mid-shift meal as at Bai Bang.

Many participants to the group discussions made it clear that there was a widening gap in cultural attainment between workers of the raw material areas and those working at Bai Bang. For example, only some households at Brigade 203 had black and white television sets, which could only receive a single channel of the local station. Whereas, at Bai Bang most workers had television sets, mostly colour sets that could receive all the channels of the central television station. At Bai Bang, billions of dong were invested in building swimming pools, gymnasium, tennis court, cultural houses. At the brigade, entertainment opportunities for workers were restricted to playing volleyball or badminton in the yard of the Brigade's head office.

### Ethnic minorities in the forest regions

Although there has been massive Kinh migration to the northwest area since the 1950s, the populations of mountain minorities have also grown quickly. The demographic changes have impacted upon the minority groups substantially. They have been encouraged to change their land use patterns away from shifting cultivation through various government programs to resettle them. Many ethnic minority workers have changed their livelihood strategies from slash and burn to forest growing and protection. They have been encouraged to develop gardens and are given loans to invest in livestock.

The 1994 study results (Nguyen, et al. 1995) of the relative incomes of ethnic minorities in the forestry development areas of the north west provinces revealed that the average Kinh incomes have accelerated more rapidly than those of the ethnic minorities. The poorest group was the Hmong, with an average income one third of the average Kinh income. Incomes were higher among the Thai, Dao and Muong, with the Tay people having the highest incomes of any ethnic group (averaging 70 per cent of the average Kinh incomes in the region). These income variations are the result of differences



in livelihood strategies, land quality and accessibility, as well as education and training. Illiteracy rates remain high among the ethnic minorities of the region and this is likely to widen the gap between their income levels and those of the Kinh. And some groups such as the Hmong are disadvantaged economically, through cultural and historical reasons, which also relate to their location on the higher slopes and peaks and not as a result of discrimination.

The forestry projects associated with the mill have had a beneficial effect on the many different ethnic groups in the northwest provinces in providing employment, training, a source of income for logs and access to numerous social services provided to the entire region. The improvements to the living standards of these groups have in many cases been able to enhance traditions and community stability.

No overt discrimination against ethnic minorities was recorded in any of our interviews, although the popular perceptions of ethnic minorities as 'backward' may have influenced how policy has been implemented. As a 1997 study indicated, 'The most important constraint that the official culture places on development efforts is the lack of receptivity it engenders among Kinh cadre to genuine participation by ethnic minorities in the planning process' (Donovan et al., p. 28).

The farm level plantation project has provided considerable help to farmers, whether Kinh or ethnic minority, to build farming models which are suitable in the mountain region. Many of the local training courses were designed particularly for the participation of ethnic minorities. Although there has been some erosion of their traditional cultural life, most ethnic minorities interviewed reported that their previous lifestyle (shifting cultivation) led to food shortages every year and that the changes had benefited them substantially economically and culturally. They regarded their change in livelihood as having improved the health and welfare of their families.

Before the project we lived mostly on shifting cultivation and our main income sources were hilly rice, cassava roots and maize. And every year each household had food shortages for three to four months and in those months they had to go to the forests to seek roots for food. (Farmer from the Dzaio minority group)

Some workers from ethnic minorities are also employed in forest enterprises and they and their families have shared in the benefits from increased wages to forest workers.

Before doi moi my family had a difficult time. We lived in a living quarter flat and I received my salary once every three to four months, sometimes even six months. In December 1997 I now earn VND 407 000 per month. With savings from the income of myself and my wife I have purchased buffaloes, land for orange cultivation, orchard seedlings, and some goats and pigs. I now also earn considerable income from breeding buffaloes and goats, and from producing oranges. (*Worker of the Tay ethnic group in Brigade 203, Ham Yen Enterprise*)

## Impact of the debate on compulsory employment of forest workers

In Larsson and Birgegård's 1985 study the authors suggested that recruitment to forest brigades was not a matter of free choice. Among the complaints of the workers at the time were that payments for work were very late and there was much pressure placed on workers to stay in the brigades. The authors also reported a strong technical and male bias in the project.

Two years later, Fforde's (1987b) report on forestry workers disagreed with the findings of earlier reports on the issue of compulsory employment. Fforde argued that people in the Bai Bang forests mostly come from the delta region of north Vietnam because of a centuries old tradition of emigration to alleviate overcrowding. He found that, for these workers, there was no 'compulsion' to work because labour is not a scarce resource and farming is unreliable as an income source. He reported that there was a perceived attractiveness of life in the forests, a relatively high value of state incomes over income from outside sources and overcrowding in the home areas of the migrants who came to the raw material areas. In Le's 1987 study it was also found that there was no pressure placed on workers to remain in the brigades (pp. 8–9).

Our interviews suggest that the debate on compulsory employment in the mid-1980s had some impact upon the living standards of forestry workers. It is generally understood by forest workers that Swedish investment since that time has helped improve working conditions, and raise productivity and income levels. The reports on the living conditions of female forestry workers in the mid-1980s stimulated numerous programs to assist them, which included the provision of loans and improved housing, health and education. But reform leading up to the allocation of land, and the higher incomes that this has generated, has been much more important in improving living standards.

## The project's objectives and political goals

Pulp and paper mills are capital intensive. The number of jobs created by the project is small for such a large injection of donor funds. We estimate that around 25 000 jobs are being sustained through the activities of the mill – mill employment, forestry employment, employment in input supplying industries and employment in other local businesses closely dependent on the mill and forestry. Nevertheless, that this many people are enjoying sustained higher living standards due to the project is a commendable achievement and contributes positively toward our overall assessment of the project.

Schoolbooks, education and technology transfer were a high social priority in the 1970s and 1980s. The benefits from establishing a pulp and paper mill were perhaps more important to the Vietnamese planners at the time than the employment opportunities that may have been created. Economically,

particularly in the more favorable economic policy environment of the 1990s, the investment is proving both profitable and sustainable.

What if the Swedish funds had been directed instead to achieve integrated rural development for Vinh Phu province? This would have involved electrification, water supply, and road and bridge building and repair. It is highly probable that such investments in rural infrastructure would have generated high and widespread social returns. But whether such investments could have stimulated sustained higher rates of growth in the province is difficult to determine. And, in Vietnam in the 1970s, the policy environment was not conducive to effective aid of this type or indeed to investment in general.

The hindsight from 50 years of development experience has seen a distinctive trend towards donor support for rural ‘poverty focused’ development assistance. But it is hardly fair to expect the Swedish development planners of the 1970s to have the vision of those in the 1990s. In the context of its time, central planning seemed to somehow work, and the proposal to build a paper mill for schoolbooks was in many ways attractive.

## The Swedish influence

The exchange of cultures and ideas was greatly restricted by the bureaucratic cordon imposed around the Swedish camp in the early years of the project.

While many Swedes and Vietnamese who worked at Bai Bang report on the positive relations between the two groups, others comment that there were numerous tensions and misunderstandings.

It was never an easy project. The economic and cultural differences, and the peculiar circumstances of the time, made working and social relations tense (box 6.19). From the Swedish side there were many stories of delays, losses and bureaucratic incompetence by the Vietnamese. Vietnamese contributions to the project were generally delivered late, if at all, and were rarely of the standard promised. ‘Electricians’ turned out to be workers who dug trenches for electrical cables. Genuine skilled workers, sometimes trained in Sweden,

### 6.19 Intercultural tensions did arise

When asked about the inevitable intercultural tensions that may have arisen during the course of the project, one informant mentioned that these were infrequent and often laughed about by people today. One memorable incident of a Vietnamese worker chasing a Swedish worker around the mill with a big stick is remembered with pleasure rather than rancor. The early stages of the project produced numerous difficulties for the Swedes because of the restrictions upon their interaction with the local people who were curious and interested in the European visitors, and often crowded around them when they were in public. On several occasions people threw items at Swedish women in the street, not to harm them, but out of interest in their response. These early tensions soon settled into a more stable and relaxed environment for both the Vietnamese and the Swedes.



*The exchange of cultures and ideas was greatly restricted by the bureaucratic cordon imposed around the Swedish camp in the early years. Children of Swedish and Finnish experts are having a music session in the camp in the 1970s. Photo WP-systems archive.*

were reallocated to other parts of Vietnam. Swedes were not permitted to walk the 2 kilometres from the camp to the mill, but when buses failed to arrive sometimes weeks of work were lost. When motorbikes were imported the Swedes were finally able to break some of the controls on their movements. Having a Vietnamese girlfriend was an invitation for harassment.

The Vietnamese also had problems. The intense indoctrination of wartime had to be modified to accept these 'friendly capitalists'. Ideologues had trouble in communicating beyond the language barrier. Those who did befriend Swedes were visited by the police and held in suspicion. The wealth and brash consumerism of the Swedes was overwhelming. The Vietnamese knew little about the outside world, but the Swedes brought them face to face with their poverty.

That both sides persevered through the difficulties is remarkable. In hindsight, and over time, resentments and confusions have dissolved. Today, both Swedes and the Vietnamese are proud of their achievement. Visiting Swedes and Finns, and those resident in Hanoi, are all impressed with the present condition of the mill. Some of those who attended the 15 year celebrations in November 1997 had not even expected to see the mill operational, let alone at full capacity and with manicured gardens. They all noticed how much cleaner the mill looks today. Planning is coordinated and there is a clear sense of responsibility. The town, they observed, is much bigger and much wealthier.

In the forest areas there were very limited opportunities to communicate with Swedish workers. Workers we interviewed in the forest brigades said that only

on very few occasions did they see Swedish experts. Even if they met, they could not communicate because of the language barrier. There was not direct influence of Swedish culture on them.

### Changes in management practices

As reported in chapter 2, the management style of the Swedes has had a permanent impact on how the mill functions. Mill managers nominated styles of work and management as key attributes they learned from the Swedes. The Swedes were admired for their professionalism, management of time and organisational abilities. Several managers also mentioned clarity and coordination of responsibilities and important lessons learned.

Swedes interviewed during research on this issue emphasised that the mill exhibited the typical features of weak management in the early days. In particular, mill departments operated as discrete ‘empires’ due to the lack of top down coordination and planning. One department might stop the whole production process without notice to solve a minor problem. This, they noted, has now changed and the mill is tightly managed to optimise the quality and quantity of output. The only criticism of existing practice was that more time should be allocated for preventative maintenance of the machines.

Mill managers today see themselves as models in management practices for other state enterprises to study and follow. Managers are well aware that the open approach to management practiced at BAPACO is unique among state owned enterprises. The mill management takes great pride in the performance of the mill and in its own professionalism. This is not just professional management in a technical sense, but also in the approach to sharing information and dealing with external authorities and visitors. The mill is acknowledged throughout Vietnam as a good example of management style, and delegates from other state enterprises regularly visit the mill to study its operation and management. This ‘demonstration effect’ may be important in promoting enterprise level reform as the market economy develops in Vietnam.

Table 6.20 reveals that ‘management skills’ were rated as the most important determinant of promotion at the mill with ‘education’ also rating highly. Most state enterprises rate ‘years of experience’ as a more crucial factor in determining promotion.

Forest enterprise managers also reported that they learned many lessons from the different ways of thinking, working styles and professionalism of the Swedish experts. They report that the Swedes were always very open and ready to share their experiences and knowledge with their Vietnamese colleagues.

The impact of the Swedes was greatest with managers and much less with other workers at the mill, who report infrequent direct contact between the two (table 6.21). The table shows that 44 per cent of present mill workers who provided such answers said they had worked with or been trained by Swedes. One third of present mill workers had worked with Swedes for more than six

## 6.20 Total responses to determinants of promotion<sup>a</sup> Worker and manager answers

<b>Determinants of promotion</b>	<b>No influence</b>	<b>A little influence</b>	<b>A bit important</b>	<b>Important</b>	<b>Very important</b>
Years of work experience	17.9	29.4	33.5	12.5	6.8
Level of education	1.1	3.8	7.4	39.2	48.4
Management skills	0.7	1.5	4.9	21.3	71.7
Personal and family connections	17.8	40.8	20.0	12.6	8.8
Communist Party membership	13.2	20.1	16.4	22.2	28.1
<b>Total</b>	10.1	19.1	16.4	21.5	32.8

<sup>a</sup> Figures in table represent percentages and add to 100 across the rows.  
Source: Results from survey of 2546 full time mill workers.

## 6.21 Working and training with Swedes<sup>a</sup>

	<b>0 months</b>	<b>1-2 months</b>	<b>3-6 months</b>	<b>7-12 months</b>	<b>13-24 months</b>	<b>25-63 months</b>	<b>Over 64 months</b>
At the mill	55.9	5.2	5.6	6.5	6.4	11.2	9.2
Outside the mill	94.3	1.3	1.0	1.1	0.7	0.9	0.6

<sup>a</sup> Figures in table represent percentages and add to 100 across the rows.  
Source: Results from survey of 2546 full time mill workers and 164 training school graduates working elsewhere.

months. Some workers received training in Sweden and these are included in the 119 workers (6 per cent of total workers) who reported working with Swedes outside the mill.

More workers and managers thought the Swedes were ‘too soft’ than those who reported that Swedes were ‘sometimes rude’. Most, however, considered the Swedish style of work to be ‘fair’ or ‘sympathetic’.

### The generation of goodwill

The enduring perception is that the presence of the Swedes benefited the region and the lives of its inhabitants. There is enduring goodwill towards Sida and the Swedish people who worked on the project. Apart from the obvious impact of Swedish management practices at the mill itself, in the provinces the Swedes impressed people with their social welfare ethos. The Swedes were perceived as thoughtful and caring to workers. The granting of loans to unmarried women to build their houses, the allocation of land to disadvantaged women to build houses (which was done by some forest enterprises) and the donations of aid to nurseries and schools stem from the Swedish influence. Forest workers we interviewed had fond memories of how Swedish experts paid attention to the lives of their children by giving toys and clothing to the creches.

## Responses to outsiders: trust and openness

A consequence of the Swedish presence has been familiarity, trust and openness in dealing with foreigners. Even the local government authorities are receptive and informative. Our research benefited greatly from this aspect of the Swedish legacy. Mill managers were courteous, helpful and provided all the information we asked for.

The project engendered trust at several levels. Respondents reported that the positive impact of the Swedes was largely due to their long term involvement in the region and to their ability to fulfil promises on both a personal, group and national level.

There are also high levels of trust in the mill and in the institutions and organisations associated with the mill. Workers feel secure and consider that managers are doing their best to promote worker welfare. Cooperation between the mill and local authorities is high. Although trust is not directly measurable, it was a factor frequently mentioned in interviews and can be seen in the apparent absence of high level corruption and deceit that mark many other enterprises in Vietnam. Recent civil unrest in some areas of the country has demonstrated that lack of intercommunal trust is a major factor in eroding social stability. Trust is an important Swedish legacy.

The exposure to different world views, aesthetics and cultural differences such as language and social behaviour was also beneficial to mill workers in assisting them to adjust more readily to social and economic change since the advent of *doi moi*.

## Social problems

Interviews and focus group discussions revealed that social problems were more severe in the past when workers were more isolated from mainstream Vietnamese society and many women had difficulty finding marriage partners.

Very few people in the region feel that there have been any social disadvantages of the Swedish presence. The few who report disadvantages believe that social problems have increased, but this is not supported by the statistics. We were informed by the authorities that there is minimal criminal activity in Phong Chau township and little or no prostitution and drug use. Outside of Phong Chau, the large township of Viet Tri has become the site of a significant number of brothels. This situation cannot be directly linked to the presence of the mill as Viet Tri is situated at the intersection of several highways that link the entire northwest region to Hanoi. Recent studies of prostitution in Vietnam indicate that truck drivers are the major client group of prostitutes. High level crime, social fragmentation and civil unrest are not apparent in Phong Chau.

The surveys also asked about an apparent problem of children in the province who had Swedish fathers. We were told by several Swedes who had worked on the project that there were 'maybe 90' such children. We therefore included

a question about these children, although subsequently found evidence of only a single child whose mother claimed had a Swedish father. The local authorities said they had no knowledge of any other than the single known case. Others told us that the typical practice in such circumstances involved pressure by local and village authorities for the woman to have an abortion. We therefore doubt that this was an issue in the past. It is certainly not an issue today.

Throughout Vietnam today social problems are emerging in response to nationwide changes. These problems include migration of youth to the cities for employment and the subsequent dissolution of family ties, rising crime rates, increasing reports of local government corruption and rising social unrest. By contrast, we found a high degree of social stability in the Bai Bang region.

## Ongoing issues

The social and economic benefits of the mill are readily apparent – through improvements in housing and working conditions, job security and social life. But our interviews have highlighted several areas of continuing concern. These relate to worker health, equal opportunity for women, difficulties faced by private farmers in selling their logs and the dearth of training opportunities for farmers in the forest regions.

Mill workers receive excellent health care and mill management has made a concerted effort to improve the occupational health and safety of workers in recent years. Despite increases in ventilation and the installation of more effective air conditioning, the incidence of respiratory diseases needs attention. And more needs to be done to improve the health of women forest workers.

It appears that women are still at a disadvantage in their employment opportunities throughout the region. More positive steps to improve this situation could be implemented with the development of a deliberate mill policy to enhance equal opportunity in relation to employment and training matters.

Forest enterprises have more secure arrangements in supplying wood to the raw materials company than do private farmers. Farmers are reporting that this is a major disincentive to planting more trees. The planned increase in capacity of the mill will assist in resolving this situation. Private farmers, being the most disadvantaged group, would benefit from clearer signals about what to plant and how to market their logs.

Although living conditions have improved throughout the northwest, there is still widespread poverty and low levels of education among farmers. The Vocational Training Centre has proved extremely successful in meeting the training requirements of the paper industry. The centre could broaden its curriculum to provide a wider range of training opportunities to help foster commercial developments in the region.



# 7 Comparing social benefits and costs

The mill contributes social benefits through a number of avenues – mill profits, taxes, payments for logs above their value in other uses, payments to workers above what they would earn elsewhere, additional agricultural production from hillside rehabilitation, higher earnings to workers throughout Vietnam from their Bai Bang training and the provision of medical and other services to the wider community. Offsetting these benefits are costs imposed through emissions to the environment. Protection against paper imports also imposes costs on Vietnamese consumers. Whether such protection costs should be debited against Bai Bang depends on whether, in the absence of Bai Bang, such protection would continue.

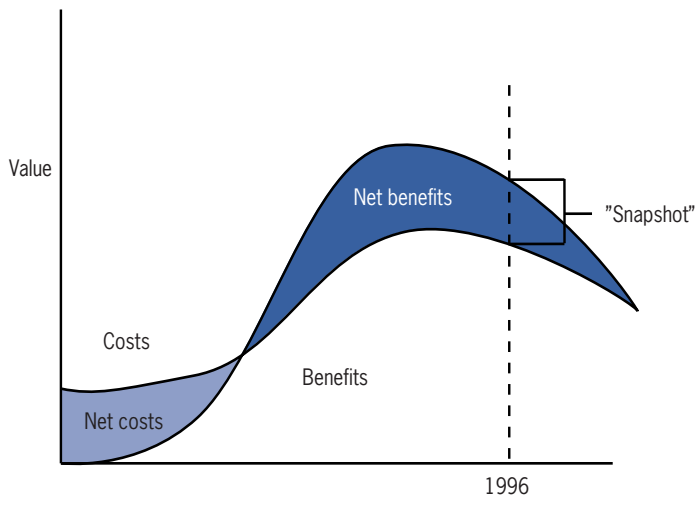
WHAT ARE THE COSTS AND BENEFITS to Vietnam from the operation of the mill? Do the benefits exceed the costs? Cost–benefit analysis is the appropriate technique for exploring these questions. Cost–benefit analysis typically focuses on the stream of benefits and costs throughout a project’s lifetime. By contrast, our snapshot approach is confined to benefits and costs in one year.

Chart 7.1 illustrates how the snapshot approach compares with the typical dynamic approach of cost–benefit analysis. The chart shows an illustrative, but typical, profile of costs and benefits of large projects. Costs are higher than benefits in the early years of a project, leading to the net costs shaded. As the project proceeds, benefits may increase more rapidly than costs and at some point will exceed costs. Then, as the project reaches completion, the benefits may remain higher than costs or the two may converge again as shown in the chart.

Cost benefit analysis is typically concerned with adding up, over time, the shaded areas (using an appropriate discount rate) and making a judgement about whether the total benefits exceed the total costs.

The snapshot approach makes an assessment of the costs and benefits from the operation of the project within a single year (1996) and determines whether the benefits exceed the costs. This approach implicitly recognises that the investment in the Bai Bang project is now history. The relevant issue today for

## 7.1 The snapshot approach



Vietnamese decision makers is whether BAPACO should be allowed to continue operations. And that depends on whether these questions add to or detract from Vietnamese living standards.

There are, of course, limitations to the snapshot approach. Vietnam has changed dramatically since the beginning of the project and continues to change rapidly. The effects of the mill are also likely to be changing. Whether any particular cost or benefit from the mill, seen from a single point in time, will persist depends on the changes Vietnam continues to undergo.

A similar point can be made about benefits in the past. A number of people interviewed insisted that the mill must be viewed from a historical perspective. The sheer lack of infrastructure of any kind in Vietnam following the war with the United States meant that any capital project would have a huge effect. The benefits from the training that went with the mill construction were also likely to have been very large in the early years of the project. However, these effects are likely to have declined as Vietnam has embraced a series of reforms and has allowed increased foreign investment.

It may also be the case that potential costs from the mill (such as pollution) could be increasing over time as the production from the mill increases so that future costs may be greater than revealed in a single snapshot. The underlying dynamics of the mill's benefits and costs need to be kept in mind when interpreting the results of the snapshot evaluation.

## The project in a rapidly changing Vietnam

The planning, construction and operation of the mill have taken place in a rapidly changing Vietnam. This makes a typical dynamic cost-benefit analysis

virtually impossible. It is more practical to ask the question: is the mill today generating net benefits for the Vietnamese?

Understanding the changes that have occurred in Vietnam since the project began is crucial to understanding why a snapshot approach is necessary and to avoiding the potential dangers of the snapshot method. It is also necessary to begin to construct the baseline. Chart 7.2 puts the mill's developments in the context of the changes taking place in Vietnam.

Negotiations on the form the Swedish aid would ultimately take occurred during the war with the United States. This would have exerted a strong influence on decision making, especially on Vietnamese views about the most appropriate form of aid for their nation.

The construction of the mill took place shortly after reunification, a time of great challenge for the Vietnamese. As well as trying to establish a single nation from two opposite economic paradigms (central planning in the north and a market economy in the south), the administration was managing a large number of industrial aid projects. Most of these projects failed and the targets of the first national plan were nowhere near met.

The strains of the period culminated in a famine shortly before the commencement of production at the mill. This economic crisis led to some initial reforms. However, many of these were subsequently reversed.

In 1979 Vietnam invaded Cambodia, resulting in an embargo on Western aid and trade, which continued to the mid-1990s. Throughout the early years of the mill's production, Vietnam had continual border clashes with China, received concessional trade credits from the Council for Mutual Economic Assistance (CMEA) countries and had no access to trade with the West.

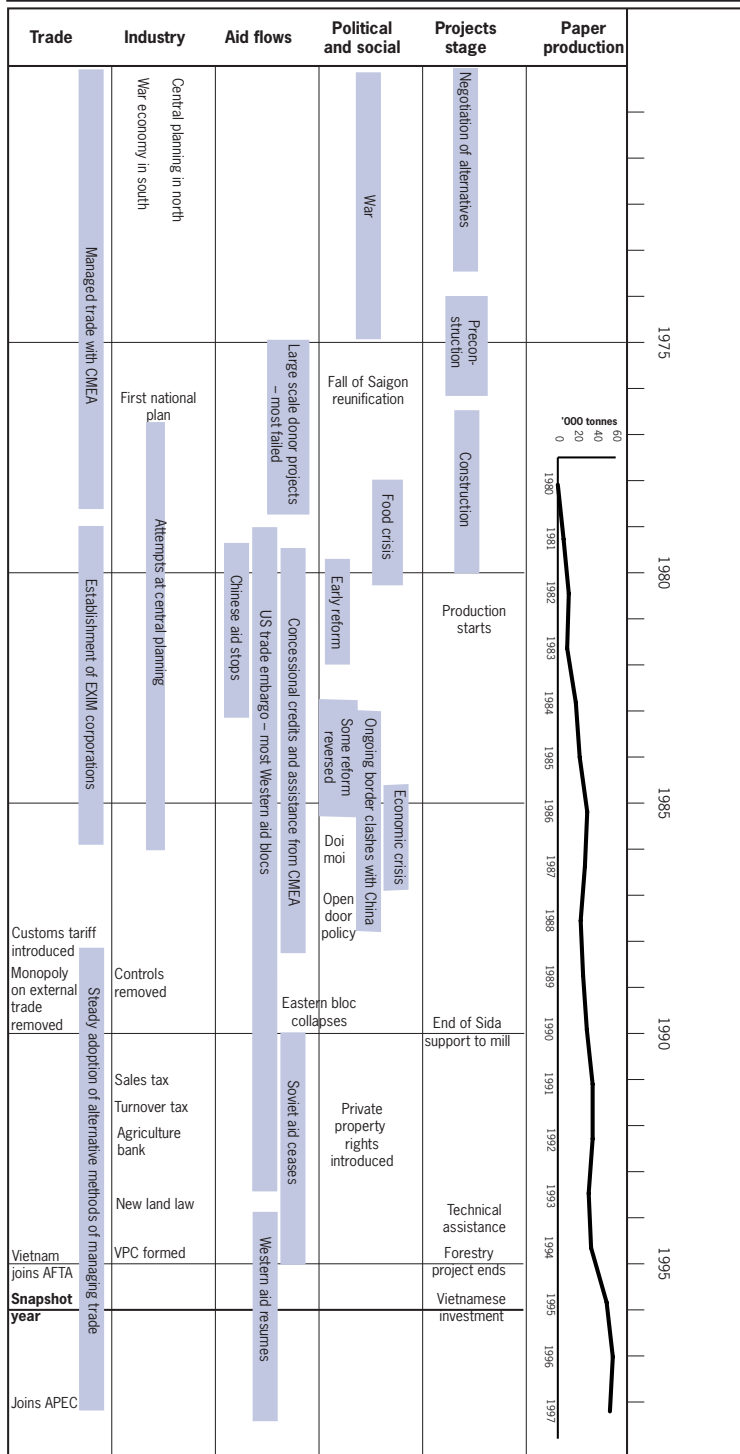
Another economic crisis starting around 1985 saw the beginning of the comprehensive reform process that Vietnam is still undergoing. Significant increases in mill production thus took place in an atmosphere of *doi moi* – opening to foreign trade and investment, and significant changes in private property rights. All of these factors have had a significant influence on mill operations.

## Evaluating costs and benefits

If Vietnam had a well functioning market economy, and if the mill did not involve any costs and benefits which occur outside of the mill, then the social value of the mill would simply be the annual profits (revenues less costs) it generates. Neither of these conditions applies, however, and so the task of social cost-benefit analysis is to set out estimates of where there are costs and benefits not reflected in the mill's profits.

The magnitude of the costs and benefits from the mill will depend on what would have happened in the absence of the mill – the counterfactual or

## 7.2 A timeline – Bai Bang in the broader context



baseline. To see why this is the case, consider the question: what is the value to Vietnamese consumers of the paper produced by Bai Bang? Answering this requires a view about what would have happened in the absence of Bai Bang. One possibility is that, without Bai Bang, consumers would have unrestricted access to imported paper. In this case, the value of Bai Bang, from the perspective of consumers, is the difference between the price of Bai Bang paper and the landed import price of paper. If Bai Bang paper were more expensive than imported paper, then the value to consumers of Bai Bang would be negative.

Another possibility is that, without Bai Bang, consumers would not have free access to imports (a not uncommon situation in Vietnam), and would have to buy more expensive and poorer quality paper produced elsewhere in Vietnam. In this case Bai Bang is likely to generate significant positive benefits to consumers.

Which one of these is most appropriate for the evaluation? Arguments can be put both ways. But the important point is that the choice of the baseline will have a significant influence on the magnitude of costs and benefits, and so should be made explicit in the analysis. The illustration provided above is one of many choices that must be made throughout the analysis.

## The mill's economic interactions

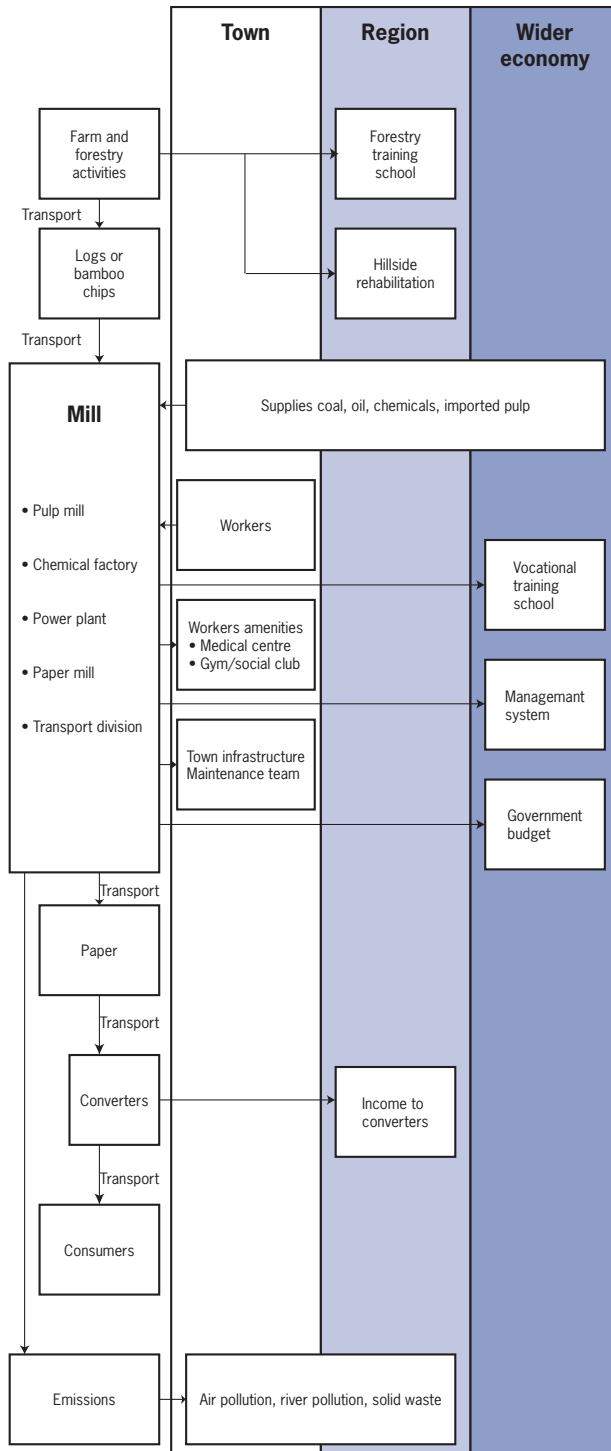
Chart 7.3 summarises the mill's key interactions by taking a production perspective – moving from inputs to outputs and showing how various indirect effects occur along the way.

The production chain begins with forestry to farm activities that produce logs and bamboo chips for transport to the mill. The mill is divided into a number of components and purchases chemicals, coal and other materials as well as the services of workers. The mill combines these inputs to produce paper, some of which is sold to converters for further processing and some of which goes direct to consumers. The mill also produces solid, liquid and gaseous emissions that are discharged into the air and nearby waterways.

Each point in this chain involves a number of effects on the wider community.

- The mill is associated with two training schools: a forestry training school and a vocational training school. The main intent of these schools is to train either workers for the mill (in basic paper making and maintenance techniques) or farmers and workers for forestry enterprises. Both these schools have the indirect effect of providing workers with skills that are used elsewhere in Vietnam.
- Planting trees under the forestry and farm forestry activities has rehabilitated significant areas, leading to improved water retention and higher agricultural production than would otherwise have been the case.
- The mill provides a variety of amenities to workers, including a gym and

### 7.3 The production chain and key economic interactions



social club, a school and a medical centre. While mostly used by workers, these facilities provide benefits to the wider community. Similarly, the mill's maintenance team, while mostly concerned with work in the mill, also provides services to the wider community – through, for example, improving local infrastructure and providing storm emergency help.

- The mill's management system is in many ways unique in Vietnam, and some of the management techniques (including environmental monitoring techniques) have been transferred and adopted elsewhere in the country.
- The mill also pays a significant amount of tax, which contributes to the national and regional government budget.

As discussed in chapter 3, the Bai Bang project also involved transport and housing subprojects to help facilitate mill operations. The benefits of the transport subproject are captured through enhanced mill profits. As indicated in table 2.11, housing taxes are collected from workers who stay in company staff houses.

Table 7.4 summarises the costs and benefits associated with each point in the chain presented in chart 7.3. In principle, these various costs and benefits could be added up to give an overall indication of the benefits of the project.

Table 7.4 also identifies reasons why there may be a divergence between the benefits and costs arising from a particular point in the chain. Unless there is a divergence, the benefits and costs will cancel out. Consider the purchase of chemicals from suppliers outside the mill. While this generates income for these suppliers, these chemicals have a so-called opportunity cost – they could have been sold elsewhere or the resources used to produce them could have been used to produce something else. The chemical suppliers are compensated for this opportunity cost through the price they receive from the mill. In a well functioning market, the compensation and the opportunity costs will 'cancel out' and will not be a source of net benefit to the community.

However, if there are any 'distortions' in the market, perhaps through taxes or subsidies or quantitative restrictions, there may be a divergence between the costs and benefits. An important divergence arises through tariff protection. With a tariff the price of the domestic product is raised and so the opportunity cost of the resources used to produce the product is greater than the community value of the output.

Divergences also arise if the mill generates costs on others which are not met by the mill (externalities) or provides public benefits. Externalities such as pollution may result in costs not reflected in the profits of the mill. Public benefits such as leisure facilities for the wider community are not reflected in the mill's profits.

We consider in turn each of the categories in table 7.4 where the evidence suggests a divergence between benefits and costs.

## 7.4 Benefits and costs from the project

<b>Category</b>	<b>Benefits</b>	<b>Costs</b>	<b>Reasons for divergence</b>
<b>Inputs</b>			
Logs	Income to forest workers and farmers	Alternative use of resources	Forest workers or farmers may not have alternative employment opportunities
Chemicals	Income to suppliers	Alternative use of resources	Taxes or subsidies or quantity restrictions
Imported pulp		Foreign exchange	
Workers	Income (wages)	Opportunity cost of time, that is, employment elsewhere	Lack of employment opportunities. The donated capital (mill) and associated training may increase the marginal product of labour and so allow higher wages than otherwise
<b>Outputs</b>			
Paper	Sales revenue	Resources used to produce paper	Tariff protection. It may be cheaper to import the paper than to produce it domestically
Emissions		Effects on health, farm production etc	Not counted in mill costs except in cases where compensation has been paid
Converters	Income	Opportunity costs	Lack of alternative opportunities
Taxes	Government revenue	Cost to the mill	Government provision of public goods elsewhere in the economy
<b>Other effects</b>			
Training schools	Higher skills for workers	Opportunity costs of time and resources	Potential public good
Worker amenities	Services to workers	Cost to mill	Potential public good
Maintenance team	Services to township	Cost to mill	Potential public good
Hillside rehabilitation	Allows agricultural production to increase		Benefits not counted in mill revenues
Management system	System adopted elsewhere in Vietnam	Cost of training	Public good

### The cost of logs

There are a number of reasons why the cost of logs to the mill may not reflect their true social costs. Forestry workers and farmers may not have alternative employment opportunities, or may only have opportunities that are less productive from an economic viewpoint. This means that the true wage costs of these workers are lower than the actual money wages paid. From the point of view of the mill it means that the social cost of logs is lower than the price actually paid. On the other hand, logs purchased by the mill may have alternative uses. They could, for example, be chipped and then exported.

The average economywide value of logs is VND308 242 per cubic metre (estimated from GSO 1998). The price of logs at the mill door averages around



VND400 000 per tonne. We assume, on this basis, that the social opportunity cost of the logs used by Bai Bang is around 75 per cent of what the mill is paying for them. The mill spent VND77 666 million on logs in 1996, which have a social opportunity cost of VND58 250 million. This means that the mill generates additional benefits of VND19 416 million from its log purchases.

Do the logs have alternative, higher value uses than their current pulp uses at the mill? If allowed, would it be possible to profitably either chip the logs and export them or export sawn timber? In US dollars, the mill pays around \$76 per bone dry tonne. This same wood could potentially earn US\$115 per tonne chipped at the export fob port. However, chipping and exporting logs requires a large investment in infrastructure. Chipping is a low value, high volume activity so scale and turnover are essential for profitability. This in turn requires low transport costs (from the point of harvest to the port) and efficient bulk handling facilities at the port. Vietnam has neither of these, and it would not be possible to establish profitable chipping activities.

While it is possible that the resources devoted to the mill have crowded out the possibility of establishing a viable chipping industry, it is important to remember that the forest resources available today exist *because* of the pulp and paper mill project. The resources were established in order to supply the paper mill. Thus, even if the logs had alternate and profitable uses today, the profits from these uses would be attributable to the project itself.

### Hillside rehabilitation

As suggested in table 7.4, tree planting in some regions through enhanced water retention in upland areas may have allowed agricultural production to be higher than otherwise. This is an external benefit from the mill's production process and is not counted in the mill's profits.

There is no formal measure of the amount of land added to production in this manner. A conservative estimate is that hillside rehabilitation has allowed rice production in 250 hectares that would not have taken place in the absence of the forestry program associated with the mill. Rice yields in the northern mountain regions of Vietnam are around 3 tonnes per hectare. Thus, hillside rehabilitation has allowed the production of an additional 750 tonnes of rice. At a farm price of VND1900 per kilogram, this means additional farm revenue of VND1.4 billion.

Costs associated with growing this rice are around VND0.4 billion, resulting in a net gain from hillside rehabilitation of VND1 billion.

### The wages of mill workers

As in the case of forestry workers, the wages the mill pays to its workers may not reflect the social opportunity cost of labour. If workers have few employment opportunities elsewhere (at similar wage levels), then the social benefits of their employment will be higher than the wages paid. Equivalently,

the social cost of the workers will be lower than the wages paid. Either way, mill profits will understate the benefits of the mill.

Workers at the mill earn an average of VND1 million per month. Table 7.5 provides data for monthly income from sources other than the mill. Two key points emerge from this table. First, for all Vietnam average monthly income is considerably lower than the VND1 million per month paid to Bai Bang workers. Second, incomes in the northern mountain regions are lower again.

Table 7.5 suggests that the opportunity cost of mill workers is around half the wage actually paid. The mill's total wage bill for 1996 is VND32 234 million (this is the total wage bill excluding social insurance, health insurance and trade union fees – see tables 2A.2 and 2A.9). If the social opportunity cost of this is half the actual wage bill, then an additional VND16 117 million is contributed by the mill.

7.5 Income alternatives per worker		
Income source	Northern mountains	All Vietnam
	VND per month	VND per month
Agriculture and forestry	315 000	238 000
Non-farm self-employment	99 000	242 000
Wage employment	56 000	143 000
Pensions, etc.	28 000	22 000
Other income	2 000	12 000
<b>Total</b>	<b>500 000</b>	<b>656 000</b>

Source: CIE estimates based on GSO (1997 and 1998).

### Worker amenities

The mill provides significant non-wage remuneration to its workers through the provision of a variety of amenities, including a gymnasium, a school and medical facilities. Some of these amenities are also provided to the wider community and many have a public benefit. To the extent that this occurs, the valuation of the wider community benefit should be added to the mill's profit.

It is important to note, however, that the size of this benefit is likely to be limited because each of the amenities is subject to congestion. And it is likely that the workers capture most of the benefits.

The medical centre provides medical facilities for around 1500 people in addition to mill workers. These facilities are likely to increase the productive life of the people treated by potentially lowering the burden of disease they face.

According to the World Bank (1993), the burden of disease in low income Asian countries is 260 DALYs per 1000 population. A DALY is a 'disability adjusted life year', which measures the years of life lost to premature death and years lived with a disability of specified severity and duration. Thus, in low income Asia, 260 years of healthy life are lost due to death and disease.

Applied to the population with access to Bai Bang's medical facilities, this translates to 390 DALYs per year in the absence of medical care.

The World Bank also estimates that a minimum health care package of the kind provided by Bai Bang's medical facilities lowers the burden of disease by around 30 per cent. Applied to Bai Bang, this is a reduction in DALY's of 117. If we value each DALY as one year's work, and if we apply either the average regional wage rate or the Bai Bang average wage rate, then the value of the medical facilities translates to between VND702 million and VND1404 million.

### The value of the paper produced

Vietnam does not currently allow the free import of paper. Imports are controlled both through a tariff (currently set at 40 per cent for writing paper) and through the occasional application of quantitative import restrictions. The existence of these barriers raises the possibility that the unit value of the paper sold by Bai Bang does not reflect the social value of that paper. Adjustments must be made to account for this.

Comparison with international prices suggests that Bai Bang's prices are up to 10–20 per cent above import parity. One interpretation of this is that, without protection, consumers could get cheaper paper. That is, if the alternative to Bai Bang paper is imported paper, then consumers are paying a higher price than necessary. The total payment for Bai Bang produced paper made by Vietnamese consumers in 1996 is VND574 262 million. The value of this at world prices is VND459 410 million. This means that Bai Bang could be costing consumers VND114 852 million.

The above comparison implicitly assumes that, without the project, the Vietnamese economy would be able to obtain the equivalent to Bai Bang's production at world prices. This is a key comparison for any project evaluation. However, in the case of Bai Bang, it is worth considering an alternative. Vietnam's attempts to achieve self-sufficiency for a variety of 'essential' products illustrates that, without Bai Bang, tariffs, or the tariff equivalent (extent to which the tariff plus quantitative restrictions on imports raises the domestic price above the world price), on paper are likely to be considerably higher than they are currently.

This means that consumers would need to buy even higher cost domestic paper and Vietnamese resources would have been used for more inefficient local paper production. Thus, if Bai Bang has displaced higher cost domestic production, rather than imports, it could have in fact resulted in a net welfare gain compared with what would otherwise have been the case. For the analysis here, we assume that this alternative comparison means that the welfare cost of Bai Bang to consumers is zero.

### Government revenue

As set out in chapter 2, the mill pays a variety of taxes, some related to its capital, some on the land it uses, some on its turnover (purchases of goods



*A comparison with international paper prices suggests that Bai Bang's prices (costs) are up to 10–20% above the costs of imported paper.*

*Photo: A. Berlin.*

and services) and some on its profits. In addition, the mill pays 'depreciation' into a fund which, in principle, could be accessed by other mills in Vietnam according to VPC plans.

While these various taxes are costs to the mill (reducing its overall profit) they are transfers to other parts of the economy. The value of these taxes should be added back to mill profits to give an indication of the social value of the mill. The following taxes should be added back to the mill's profits:

- the turnover tax (VND10 611 – see table 2.11);
- the capital tax (VND21 486 – see table 2.11) and
- the profits tax. In allocating a value to the profits tax we need to adjust the amount reported in table 2.11 to reflect the fact that the analysis is being done for a snapshot production year (1996) rather than an accounting year. Because some of the accounting costs refer to production in future years, the production year profit (before tax) of the mill is VND68 135 million rather than the VND42 849 million reported in table 2.1. The profit after tax is therefore VND44 287 million (35 per cent profit tax). Thus, for the production year the profit tax is VND23 847 million rather than VND14 997 million as reported in table 2.11.

The land tax and housing tax have not been added back to the mill's profit as they are likely to reflect a charge for the use of resources which could be used

elsewhere. Total taxes to be added to the mill's profits are therefore VND55 944 million.

### The cost of capital

The social profits of the mill need to reflect the fact that operation will involve the consumption of capital that requires replacement. The mill profits used here are net of a VND48 100 million depreciation charge. As the book value of the capital is VND509.1 billion, this reflects a depreciation charge of 9.4 per cent.

### The effect of emissions

Does waste from the Bai Bang mill have harmful environmental effects leading to disease in humans or to reduced production in other industries (particularly fisheries and agriculture)? If so, how large is this effect and how costly is it?

Answering these questions requires an understanding of:

- the nature of emissions from the mill;
- the magnitude of emissions from the mill;
- the toxicity of these emissions; and
- the ability of the environment to absorb and neutralise the emissions.

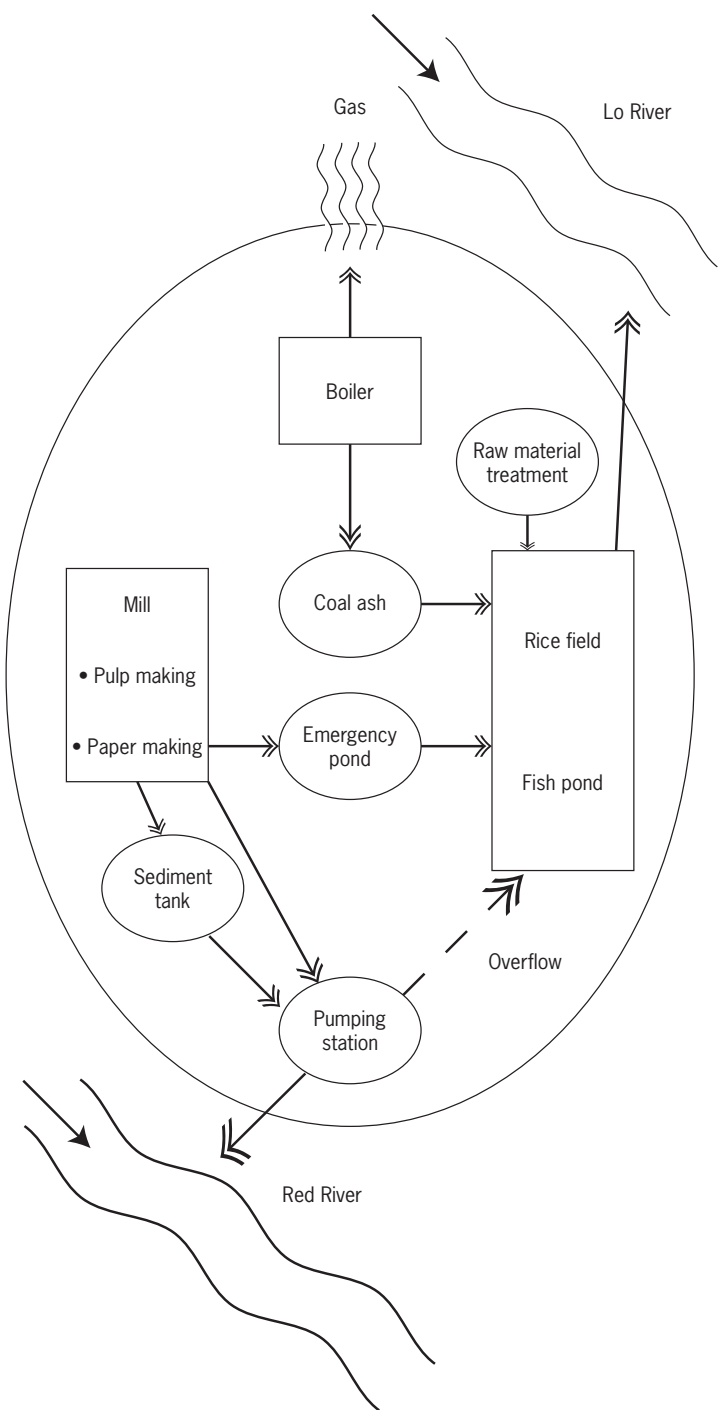
Like all pulp and paper mills, the Bai Bang mill emits a variety of waste products into the environment. Table 7.6 summarises the emissions and their potential effects and chart 7.7 summarises the major emission flows to rivers and nearby rice fields and fishponds.

A number of studies have measured the magnitude and toxicity of the emissions from the mill. These include a major environmental impact assessment of the mill sponsored by Sida from 1993 to 1996 as well as an

**7.6 Mill emissions and their potential effects**

<i><b>Emission</b></i>	<i><b>Potential effect</b></i>
Bark and wood pieces	Solid. Used as fuel by farmers. No harmful effects.
Lime mud	Affects agricultural land and groundwater systems. Can destroy water in wells.
Sodium hydroxide	Present in liquid effluent. Kills fish in dry season. Smells unpleasant. Affects groundwater system.
Organic chlorides,	A range of compounds present in liquid effluent. Known to be toxic and may halogens and dioxins accumulate. May affect flora and fauna depending on concentration.
Heavy metals	Emitted through liquid effluent originating from the coal. Can accumulate in environment and may be ingested by humans through the aquatic food chain.
Hydrogen sulphide (gas)	Potential respiratory effects on humans. Potential to affect crop growth.
Sulphur dioxide (gas)	Potential respiratory effects on humans. Potential to affect crop growth.
Dust	Potential respiratory effects on humans. Potential to affect crop growth.

7.7 Mill effluent emitted to nearby waterways



environmental audit undertaken in 1993. In addition, our interviews with the district and provincial People's Committees indicated a concern with the effect of the emissions.

### The quality of emissions

Table 7.8 summarises information on the quantity of emissions from Bai Bang. To place these in context, Bai Bang's emissions are compared with one US emission standard for the same variety of pulp mill.

7.8 Emissions from Bai Bang compared with a US standard			
<i>Emission</i>	<i>Unit</i>	<i>Bai Bang</i>	<i>US standard</i>
<b>Liquid effluent</b>			
COD <sup>a</sup>	mg/l	400	250
BOD <sup>b</sup>	mg/l	180	50
Suspended solids	mg/l	280	60
pH		4–8	6–9
AOX <sup>c</sup>	mg/l	8.3 to 13.8	7.5
<b>Gas</b>			
Hydrogen sulphide	mg/Nm <sup>3</sup>	185	60
Dust (particulate matter)	mg/Nm <sup>3</sup>	1 548	100

<sup>a</sup>Chemical oxygen demand – measures the amount of oxygen required to oxidise the organic matter in the effluent. <sup>b</sup>Biochemical oxygen demand – measures the amount of oxygen used by microbes to decompose the organic matter in effluent. <sup>c</sup>Absorbable organic halogens – measures dissolved organic matter in effluent by the amount that is absorbed by carbon.

Source: Kim Oanh (1996); Kim Oanh and Bengtsson (1995); AF-IPK (1994); US Ex-Im Bank (1998).

In each case, Bai Bang's emissions are considerably higher than the US standard. These measures, however, do not provide a direct indication of the toxicity of emissions. The BOD and COD measures provide an indication of the extent to which the discharge of organic material from the mill is absorbing the dissolved oxygen in the effluent (and hence the river) as it oxidizes, or as its chemical bonds break down. Since a healthy river should have almost 100 per cent saturation of oxygen, the absorption of oxygen may cause problems for fish and plants. Suspended solids potentially cause a problem by limiting light penetration into the river. But apart from these oxygen and light effects, the effluent may have poisonous effects not captured by either of these measures. The AOX measure is designed to give an indication of the presence of organic effluent, but does not give an indication of its toxicity.

### Toxicity of emissions

Testing the toxicity of emissions requires a technique that measures the ability of the effluent to kill living organisms. There are a number of techniques for this. One used comprehensively for Bai Bang is the Microtox test. This involves exposing a luminescent marine bacterium to effluent samples and measuring (by the extent to which the light output of the organism decreases) the toxic effect of the effluent. The test result is normally expressed as the percentage

concentration of effluent required to reduce the light output of the bacterium by 50 per cent (after either 5 or 15 minutes of exposure). Results for Bai Bang (reported in Kim Oanh and Bengtsson 1995) were highly variable (depending on the time of day and the day chosen) and ranged from 15 per cent to greater than 100 per cent. This means that on some days a 15 per cent solution of the effluent is sufficient to reduce the light output of the bacterium by 50 per cent. At other times, greater than 100 per cent solution would be required to do this. On the basis of these (and other) test results, the analysts concluded that ‘no acutely toxic effects should be expected on the fauna of the receiving bodies’, although ‘it is still considered possible that the effluent may cause sublethal ecological effects in these water bodies’ (Kim Oanh and Bengtsson 1995, p. 398).

To provide some context to these numbers, table 7.9 compares the toxicity of bleach effluent from the Bai Bang mill with that from another mill in Vietnam (GOGIDO in Dong Nai) and a mill in Thailand. The results show that these other mills are considerably more toxic. The toxicity of the GOGIDO mill is 1.5 times higher than that of Bai Bang. The Thai mill is almost 20 times more toxic than Bai Bang.

7.9 Toxicity of bleach effluent: Bai Bang versus GOGIDO and a Thai mill		
Mill	Microtox result %	Toxicity emission factor
Bai Bang	14–24	800
GOGIDO (Dong Nai mill)	8–10	1 200
Thai mill	0.4	15 000

Source: Kim Oanh (1996).

This comparison has an interesting implication. Even if the effluent from Bai Bang is toxic, if the presence of Bai Bang allows a reallocation of paper production away from even more toxic mills, then the total environmental damage for a given level of paper production would have been reduced, leading to a social benefit.

### Absorption of the toxic emissions

Can the environment cope with the toxic emissions? Evidence on this is mixed. A calculation in Kim Oanh and Bengtsson (1995) shows that, using a rule of thumb, the Red River has a sufficient flow rate to absorb and dilute the toxins. The same study found that samples taken either from the outlet to the Red River when it is submerged or from 100 metres downstream from the outlet, show no toxic effects when tested using Microtox. Similarly, samples taken 2 kilometres upstream of the outlet and 7 kilometres below show no difference in water quality when tested for pH, suspended solids and chemical oxygen demand (AP-IFK 1994, p. 12).

Tests also show limited evidence for accumulation of toxins in fauna. A study of fish in the Red River (Nilsson 1991) found evidence of chlororganics in the fish bile. However, some of the physiological effects were not consistent with



those previously found to be associated with pulp mill effluent. In any case, the cause of the abnormalities could not be linked to the mill alone because of the nearby Viet Tri industrial estate and because of the tendency of the fish to migrate in the river.

To avoid the problem of attributing the source of toxins in fauna, Kim Oanh et al. (1995) studied the effects of effluent on rice, fish and molluscs in the nearby rice field and fishpond. They found no accumulation of organochlorides in the biota in the field or the fishpond, although they left untested the possibility that sediment containing toxins could be washed down the Red River and may accumulate at the delta. The same study found some evidence of accumulation of heavy metals (originating from the coal ash basin overflows) in molluscs. While there was also evidence of metal in rice grains, it could not be attributed to the mill, as the same accumulation was found in control rice samples.

### **Evidence of effects on humans**

Despite the majority of scientific research being on the effect of liquid effluent, most of the concerns for human health (expressed, for example by the district and provincial People's Committees and doctors) related to airborne particle and gas emissions. As table 7.8 illustrated, Bai Bang's emissions of hydrogen sulphide and particulate matter are considerably higher than one US standard.

Evidence from the US suggests that high emissions of particulate matter can lead to serious health problems (Pope 1989). While there is anecdotal evidence from workers and doctors that these emissions are causing health problems, the direct statistical evidence (chart 7.10) illustrates that people in the township near the mill are considerably healthier than the nationwide average.

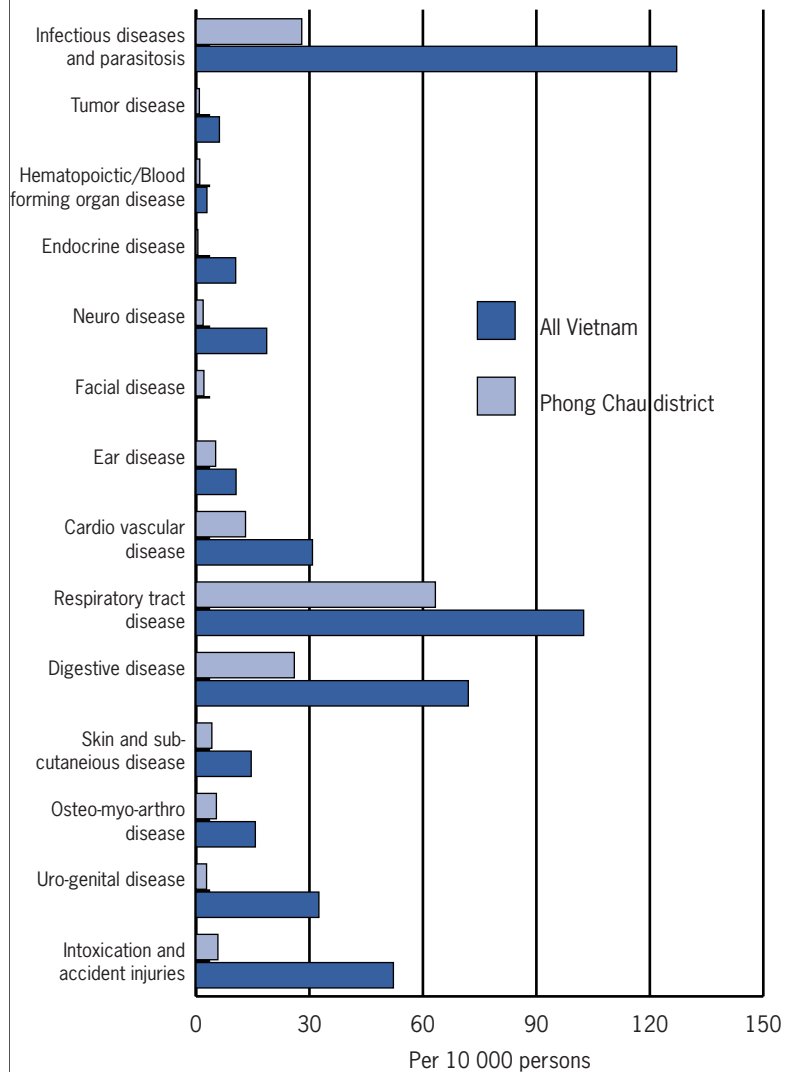
### **Overall assessment**

While the liquid effluent does not appear to affect the region around the mill, the effluent must end up somewhere. Researchers have suggested that it may accumulate in the Red River delta, although there are no studies testing this. Such a test is likely to be impossible in practice because Bai Bang is only one of many polluting factories located on the Red River.

Effluent may ultimately affect fish production in the Red River delta. Currently, value added from fisheries in this region is VND221.8 billion (3 per cent of nationwide value added from fisheries). If the effluent from Bai Bang resulted in a 1 per cent reduction in this value added, then the cost would amount to VND2218 million.

Value added from food production in the Red River delta is currently VND10 780 billion (18 per cent of nationwide value added from food production).

## 7.10 Incidence of disease and illness 1996



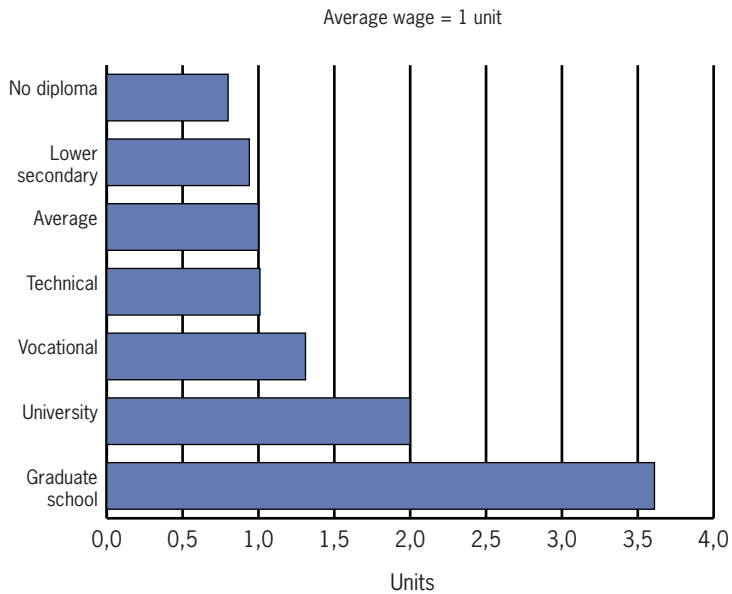
Data source: Appendix 6B

### The training schools

The benefits of education to the workers employed at the mill have already been accounted for in the adjustments made to the opportunity cost of the wages paid to the workers. It is education (in combination with the mill's capital stock) that allowed these workers to be employed at a higher wage than otherwise. What has not been accounted for so far is the benefit delivered to those trained that are not subsequently employed at the mill or in the forestry enterprises.

The mill training school has trained approximately 3000 workers that are now working elsewhere in Vietnam. Based on our survey of these workers, their average wage is VND505 671 per month. If their training was successful, then it should have allowed them to earn a higher wage than otherwise. An estimate of how much higher can be obtained by looking at relative monthly wages by educational attainment (chart 7.11).

**7.11 Relative wages by education achievement in Vietnam** Average wage = 1 unit



Data source: GSO (1996)

Average wages increase with educational attainment. Particularly important for this assessment is the difference of 7.5 per cent between lower secondary and technical qualifications, and the difference of 30 per cent between lower secondary and vocational training.

If the training provided by the mill allowed the 3000 workers to earn an additional 7.5 per cent, this translates to total additional earnings of VND1.4 billion. If the training allowed 3000 workers to earn an additional 30 per cent, this translates to total additional earnings of VND5.5 billion.

### The mill's management system

Improved management systems are a form of productivity growth. To the extent that Bai Bang's management has influenced other enterprises in Vietnam, this productivity improvement is a positive external benefit not counted for in the mill's profits.

The extent to which Bai Bang's management approach has been adopted elsewhere is unclear, although there has been considerable discussion of this possibility. As noted in chapter 3, the Vinh Phu Raw Materials Company, the company most closely associated with BAPACO, does not appear to have adopted any of the modern management techniques used at BAPACO. If the techniques cannot diffuse this relatively short distance, then the extent to which they can travel further is questionable.

## Adding up the benefits and costs

Table 7.12 adds up the benefits and costs quantified in the discussion above. In 1996, the mill generated net benefits of between VND21 796 million and VND143 668 million. This is equivalent to benefits of between US\$2.2 million and US\$13 million.

7.12 Adding up the benefits and costs		
Category	Minimum benefit	Maximum benefit
	VND million	VND million
Mill profits (after tax) <sup>a</sup>	44 287	44 287
Benefit from logs	19 416	19 416
Wage benefits	16 117	16 117
Effect of protection to mill	-114 852	0
Effect of emissions	-2 218	0
Payment of taxes <sup>a</sup>	55 944	55 944
Effect of training school	1 400	5 500
Effect of medical centre	702	1 404
Hillside rehabilitation	1 000	1 000
<b>Total</b>	<b>21 796</b>	<b>143 668</b>

<sup>a</sup>As noted in chapter 3, the Vinh Phu Raw Materials Company made a profit (around VND1 billion) in 1996 and made small payments of taxes in 1996. Because of the smallness of these figures and the limited financial information we were given for VPMC, we have not included these estimates in the table.

Source: CIE estimates.

## Some limitations of our analysis

Because of data limitations we have not made some of the comparisons typically used in this type of analysis. In particular, we have not attempted to evaluate the mill at a competitive, free market exchange rate. Calculating this exchange rate in an economy such as Vietnam is an almost impossible task. It would require an economywide analysis of all the various taxes and subsidies on trade – a task well beyond the scope of this project.

Our analysis is likely to underestimate the net social benefits to Vietnam from the Bai Bang project. By definition, it includes only those items that lend themselves to quantification.

The project has also delivered many intangible benefits. We have not, for example, valued the contribution of the project to the economic rejuvenation process in Vietnam through the examples of Western ways in production and management that were introduced.

## In conclusion

To some it may seem surprising that a capital intensive aid project in a labour intensive country and in a highly protected sector could result in net benefits to the community. This conclusion certainly was at odds with our expectation.

The Bai Bang project has some special features, however. The mill is working and is working very efficiently. And, while there is a tariff on paper, it is unlikely that Bai Bang actually needs this tariff to be profitable. Indeed, far from being subsidised, it is likely that Bai Bang is being taxed by Vietnam's policy environment. The VPC is a major constraint to Bai Bang's operations and is using Bai Bang as a source of cross subsidy for other mills.

Further, the capital injection from the aid has allowed Vietnam to exploit (and to create) a sustainable forest resource – which is unlikely to have been exploited otherwise – which in turn provides gainful employment for its labour.

# 8 Future financial viability

Mill profitability is most sensitive to the price of paper and domestic pulp production. Only small cost reductions are needed to maintain profitability if tariffs are removed provided strong domestic production can be achieved. If allowed complete financial independence from VPC BAPACO can generate sufficient profits to fund a new power boiler and expand its production to 100 000 tonnes per year. The mill should be able to cope with a range of challenges such as exchange rate changes, tariff removal and higher log prices and remain viable over the longer term.

THE ANALYSIS IN CHAPTER 2 showed the mill is currently being well maintained, operating satisfactorily, meeting its taxation obligations to government, rewarding its workers generously and generating a profit. But will it remain financially viable over the longer term? Can it generate sufficient earnings to fund new investments required for it to remain competitive against imports? And what would it take for the mill to remain profitable if tariffs and quantitative restrictions against imported paper were removed? How sensitive is the mill's profitability to changes in exchange rates, which have become extremely volatile in the wake of the Asian financial crisis?

We constructed a simple financial model of the mill and used it to address these questions. The model is built around a set of representative accounts that describe the mill's operations for the snapshot year.

## Constructing representative accounts

The first step in the financial analysis is to construct 'representative' accounts for the mill's operations for 1996, the snapshot year. A full set of information was available for this year at the time of preparing our analysis. We use three main data sources for this:

- the technical evaluation of mill performance presented in appendix 2C;
- the analysis of BAPACO financial accounts presented in appendix 2A; and
- field visits and interviews we undertook in late 1997 and early 1998.

For a variety of reasons, information from each of these sources was not always consistent. Where possible, we have used technical information to form the backbone of the representative accounts. This involved deriving costs by estimating technical unit requirements and combining these with unit price information.

In doing this, we have had to ensure that the costs and revenues all refer to the same physical production of pulp and paper. That is, we have abstained from the build up or run down of stocks. For example, our cost estimates for wood use in a given year are lower than those presented in the financial accounts because we have only included wood actually used in the production of pulp. We have not included the cost of wood added to the stockpile. Similarly, the costs for imported pulp refer only to the pulp actually used in production and not the build up of stocks of pulp.

### The fibre balance

A key technical relationship on which we build the financial model is the 'fibre balance'. This traces the fibre use from the logs through to the final production of paper with appropriate allowance being made for the losses at each stage (table 2C.16 in appendix 2C). Table 8.1 summarises the key elements of the fibre balance used for 1996.

<b>8.1 Elements of the fibre balance for 1996</b>		
<b>Element</b>	<b>Value used</b>	<b>Comments</b>
Purchase of logs	209 004 tonnes: 65% eucalyptus and acacia, 5% styraX and 30% bamboo	Based on the aggregate relationship between logs and pulp production of 5.05 tonnes of logs per tonne of pulp. Wood shares taken from mill records.
Domestic pulp production	41 387 tonnes	Taken from pulp mill records.
Imported pulp used	8 797 tonnes	Derived from expected relationship between total pulp usage and paper production. From the technical analysis this should be 1.13 tonnes of paper per tonne of pulp. Although 17 158 tonnes of pulp were imported in 1996, it was not all used in the 1996 production year. The financial statements confirm that at the end of 1996 there was approximately 8360 tonnes of pulp in stock.
Total paper production	57 027 tonnes	From pulp mill records.

Source: Appendix 2C; pulp mill records; CIE estimates.

### Technical requirements and unit costs

The fibre balance information is combined with other key technical requirements (summarised in table 8.2) to give a picture of the key material input requirements for the mill. This is combined with the unit price information (summarised in table 8.3) to generate material costs for the mill.

Other costs, including taxes, overheads and labour costs, are taken from the BAPACO financial records (appendix 2A).

## 8.2 Summary of key technical requirements Per tonne of pulp

<b>Item</b>	<b>Unit</b>	<b>Requirement</b>
Caustic soda for cooking	kg	460
Caustic soda for bleaching	kg	85
Chlorine	kg	75
Electricity	Mw	0.45
Steam	Tonne	3
Water	m <sup>3</sup>	100
Requirements per tonne of paper		
Limestone	kg	700
Fuel oil	kg	65
Salt	kg	246
Rosin	kg	9.5
Sodium sulphate	kg	70
Allum	kg	17
Water	m <sup>3</sup>	460
Coal	Tonne	3.6
Clay	kg	20.28

Source: Mill records.

## 8.3 Summary of key unit prices

<b>Item</b>	<b>Unit</b>	<b>Price</b>
		VND
Eucalyptus	Tonne	420 000
Acacia	Tonne	340 000
Styrax	Tonne	330 000
Bamboo	Tonne	360 000
Caustic soda for cooking	Tonne	1 368 327
Caustic soda for bleaching	Tonne	3 542 492
Chlorine	Tonne	3 909 036
Electricity	kW	626
Steam	Tonne	77 620
Water	m <sup>3</sup>	844
Limestone	Tonne	70 277
Fuel oil	kg	1 598
Salt	Tonne	559 787
Rosin	Tonne	8 467 248
Sodium sulphate	Tonne	1 348 070
Allum	Tonne	1 820 610
Coal	Tonne	77 620
Imported pulp	Tonne	7 344 000
Average paper price	Tonne	10 070 000

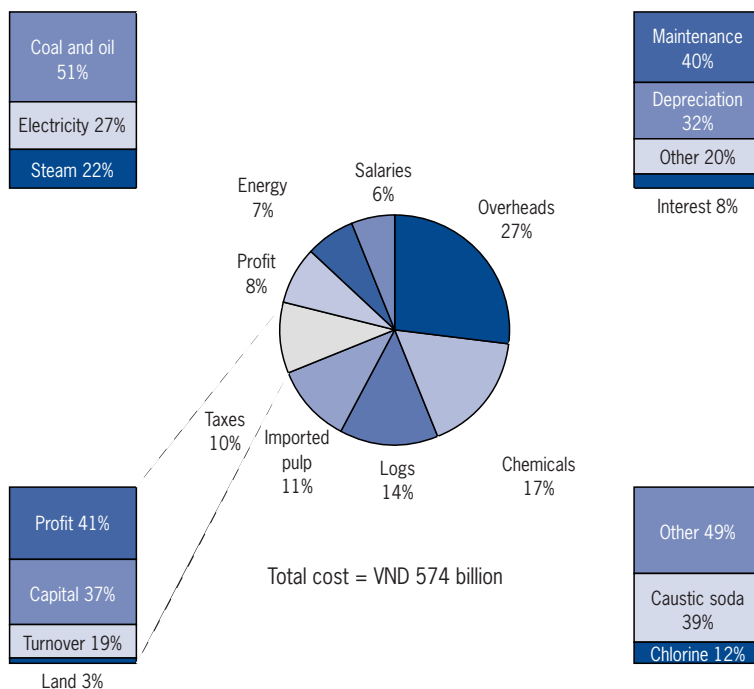
Source: Mill records.



## Cost structure of the mill

Chart 8.4 summarises the cost structure that emerges from these various estimates. Total costs are defined to equal the value of production of paper ex mill and include a profit component. Several key points emerge.

### 8.4 The cost structure of the Bai Bang Company



Data source: CIE estimates; Bai Bang accounts; field visits.

- The mill is profitable. It generates a surplus of revenues over costs equivalent to around 8 per cent of total costs. Given the mill does not have to repay the initial capital investment (which was funded by aid), there is no need for the mill to generate a return to past capital. This means that profits can be used for future investment.
- The various material costs account for just under 50 per cent of total costs, with chemicals and logs being the largest items.
- The largest single cost item is imported pulp, accounting for 11 per cent of total costs. The importance of this will become clear in the analysis that follows.
- Various taxes account for around 10 per cent of total costs, and overheads account for 27 per cent. Salaries account for 6 per cent of total costs.

Table 8.5 summarises the various costs per tonne of pulp and paper. Note that in this table the cost of pulp does not include any overhead costs, all of which have been allocated to the total cost of papermaking. The cost of pulp is \$US335 per tonne and the cost of paper is US\$805 per tonne.

8.5 Summary of costs per tonne of pulp and paper		
Cost item	VND	US\$
Cost per tonne of pulp	3 699 260	335
Costs per tonne of paper		
• Logs	1 361 917	123
• Chemicals	1 745 422	158
• Energy	756 741	69
• Imported pulp	1 132 856	103
• Overheads	2 663 984	242
• Salaries	610 237	55
• Taxes <sup>a</sup>	604 067	55
<b>Total</b>	<b>8 875 223</b>	<b>805</b>

<sup>a</sup>Excluding profits tax.

Source: CIE estimates.

## Static analysis

The first step in the financial analysis using the information derived above is to use a snapshot approach to examine the impact of various changes on the mill's profitability. The snapshot or static approach takes a single year (in this case 1996) and examines the effects of various changes on the profits in that single year. In this snapshot analysis, no account is taken of the need for investment spending to increase output.

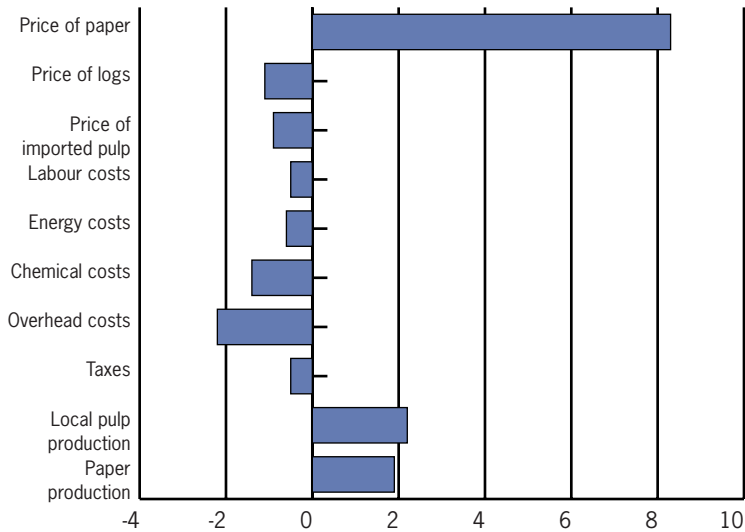
### Sensitivity of profits

The snapshot financial model can be used to examine the sensitivity of profits to changes in cost and revenue items. Chart 8.6 summarises this sensitivity. It shows, for example, that a 1 per cent increase in the price of paper would lead to an 8.3 per cent increase in profits. Similarly, a 1 per cent increase in the price of logs would lead to a 1.1 per cent decline in profits.

To generate these sensitivities we have assumed that total paper production remains at the 1996 level and that all that varies is the individual cost or revenue item.

These 'elasticities' give an indication of where the mill is most sensitive to future developments, and where future investment should be focused. Clearly the price of output is crucial in determining the profitability of the mill. This price is determined by a number of factors including the amount of protection the mill receives through tariffs and other import restrictions.

**8.6 Sensitivity of 'profits' to cost and revenue item** Percentage change in profits for a 1 per cent increase in cost or revenue item



Data source: CIE estimates.

The production of domestic pulp is also important. Domestic pulp is cheaper than imported pulp, so producing more adds to profits. A one per cent increase in local pulp production adds more to profits than does a one per cent increase in paper production. While there is some scope for increased domestic pulp production as outlined in the technical report of Appendix 2C, this is limited in the short term.

### The effect of tariff reductions

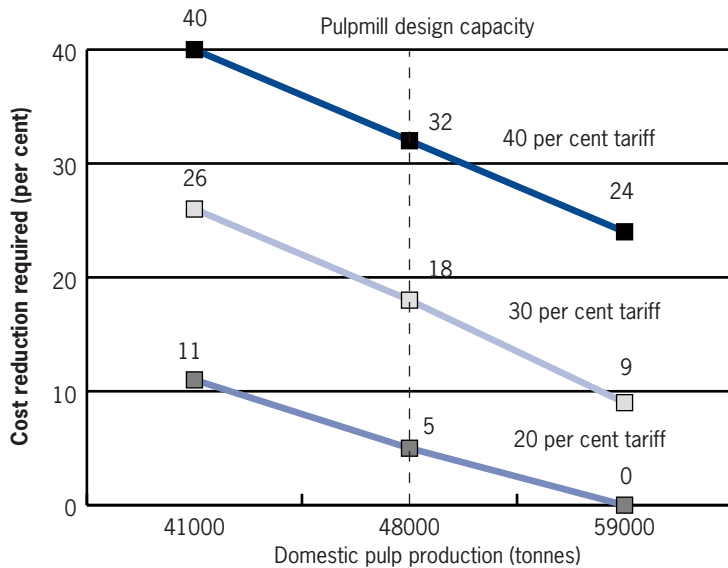
What would it take for the mill to remain profitable if tariffs and other import restrictions were removed? Because of the periodic use of quantitative restrictions against imports and the varying effectiveness of these restrictions in conjunction with the tariff, the exact extent of protection the mill faces varies over time. Chart 8.7 illustrates the reduction in costs that would be required for the mill to remain profitable assuming a variety of effective tariff rates. The effective tariff is the percentage by which the domestic price in Vietnam of imported paper is raised above the world price at the port of entry to Vietnam as a result of both the tariff payable on imported paper and quantitative restrictions on paper imports.

The chart shows, for example, that if the tariff is currently 40 per cent (or equivalently, if the current import restrictions have the effect of raising domestic prices 40 per cent higher than they would otherwise have been), and if domestic pulp production remains at its current levels, then it would require a 40 per cent reduction in costs for the mill to remain profitable.



*The mill is profitable and generates a surplus of about 8% of total costs. Welders working at the mill.  
Photo © Herldur Netocny/PHOENIX.*

## 8.7 Cost reductions required to deal with tariff changes



Data source: CIE estimates.

Because the selling price of paper (which includes the effective tariff) exceeds the cost of paper production, a proportionately smaller reduction in unit costs is required for the mill to remain profitable at lower levels of effective tariffs. For example, if the effective tariff were only 20 per cent, and domestic pulp production remained at current levels, then the mill would only require an 11 per cent cost reduction to remain profitable. Whether the mill could remain profitable after a tariff change depends on whether these cost reductions could be achieved.

Chart 8.7 also shows the importance of the level of domestic pulp production in determining the cost reductions needed to remain profitable after tariff changes. The extreme right hand point on each of the curves refers to annual production that could be achieved if the best daily production through out 1996 were achieved each day of the year. In this case, the cost reductions required to cope with tariff changes are relatively low, and potentially zero.

The middle point on each of the curves refers to the design production capacity of the mill. If this production were achieved, the cost reduction needed to cope with the tariff changes could be as low as 5 per cent.

The available evidence suggests that the effective tariff for Bai Bang is around 20 per cent. Given this, the analysis presented here suggests that in the short term, Bai Bang would need cost reductions of between 0 per cent (if it manages to increase domestic pulp production to pulp mill design capacity) and 11 per cent (if domestic pulp production remains at current levels). The evidence presented in the technical report suggests that cost savings of this order of magnitude are feasible.

## Government policy towards BAPACO

As discussed in chapter 2 VPC exerts a strong influence on BAPACO's financial operations. In particular, BAPACO pays into a depreciation fund that is effectively controlled by VPC. While BAPACO may get access to this fund, there is no guarantee of this. In the analysis presented above, monies paid to this fund were treated as a tax on BAPACO.

If BAPACO were to have total control over this depreciation charge, allowing it to contribute to profits, then BAPACO's profits would increase by around 70 per cent. This would have a significant influence on how BAPACO can respond to future economic developments.

For example, if the depreciation payment were retained by BAPACO (that is, not charged against its operating costs) and if the tariff faced by Bai Bang is 20 per cent, then breaking even in the absence of the tariff would only require a cost reduction of 1 per cent (assuming domestic pulp production remains at its current levels), rather than 11 per cent as presented in chart 8.7.

Alternatively, further taxation of BAPACO could seriously affect its viability. A doubling of the depreciation 'tax' would reduce profits by around 70 per cent and would mean that coping with the removal of a 20 per cent tariff would require a cost reduction of 24 per cent. Such a large reduction is probably outside the bounds of what is achievable in the short term.

## Dynamic analysis

The previous analysis used a single year snapshot to look at the potential impact of cost and revenue changes. Here we extend this analysis by looking at a 20 year horizon. We account for the investment that is needed to add a new power boiler, which was identified in our technical analysis as the major constraint to additional production. We also account for the investment needed to expand total paper production to 100 000 tonnes a year.

We assume that a new power boiler will cost US\$15 million and that the investment needed to increase paper production to 100 000 tonnes per year will amount to US\$55 million. The boiler is assumed to be purchased in 1998 and the investment for increased paper production is assumed to take place in 1999. Paper production is assumed to increase steadily from 2001, reaching 100 000 tonnes in 2003 and remaining at the same level until 2020. Domestic pulp production is assumed to increase steadily from 1999 and to reach 80 000 tonnes in 2001 and remain at that level until 2020.

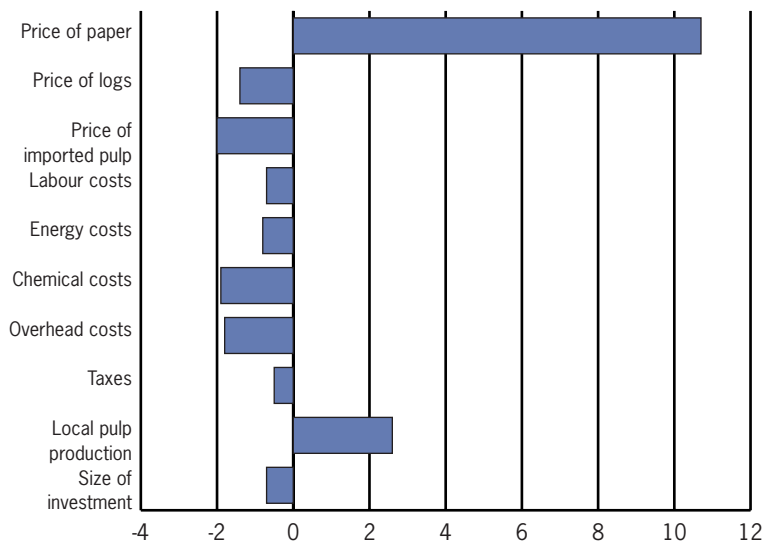
We assume that unit requirements remain constant throughout the period 1998 to 2020 and in the base run we assume that all prices remain the same in real terms. We also assume that the mill continues to pay the depreciation charge to BAPACO.

Under these assumptions, the present value of the net cash flow is positive at either a 5 per cent or 10 per cent real discount rate. That is, under these assumptions the mill can afford to pay for the investment needed to expand and will in fact generate a surplus over the years 1998 to 2020.

## Sensitivity of the net present value calculation

Chart 8.8 shows the sensitivity of the present value of the net revenue stream from the mill (revenue minus all costs including the investment outlay) to changes in cost and revenue items. As before, the price of paper is the most important item, although local pulp production remains important.

**8.8 Sensitivity of NPV<sup>a</sup> to changes in input costs, output prices and scale**  
20 year analysis. Percentage change in NPV for a 1 per cent change in cost or revenue item



<sup>a</sup> Assumes real discount rate of 5 per cent.

Data source: CIE estimates.

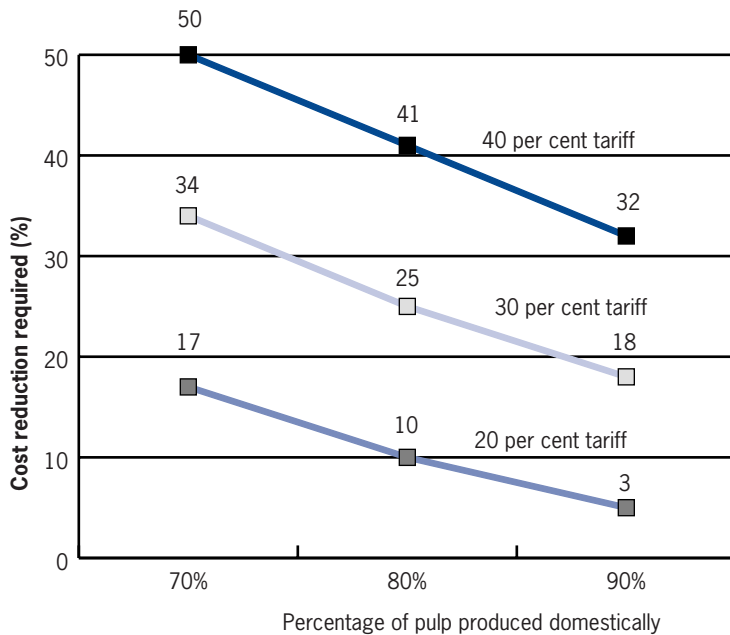
## The effect of tariff changes

Chart 8.9 shows the cost reduction required for the mill to continue to break even in net present value terms following a reduction in tariffs. The analysis assumes the mill must also fund the above investment of a new power boiler and paper capacity expansion to 100 000 tonnes in 2003.

As before, these cost reductions are sensitive to the level of the tariff and to the total level of domestic pulp production. Where 90 per cent of pulp is domestically produced the cost reductions range from 32 per cent (if the effective tariff is 40 per cent) to 3 per cent (if the effective tariff is 20 per cent).

With an effective tariff of 20 per cent, the likely cost reductions required are in the range of 3 to 10 per cent depending on the percentage of pulp produced domestically. Cost reductions in this range should be easily achievable by adopting the suggestions set out in appendix 2C. And, as was noted in the static analysis above, the size of the cost reduction required would be lower if VPC did not require BAPACO to set aside the depreciation charge.

## 8.9 Cost reductions required to deal with tariff changes<sup>a</sup> 20 year analysis



<sup>a</sup> Assumes real discount rate of 5 per cent.

Data source: CIE estimates.

### Changes in exchange rates

Recent experience in Asia shows the possibility of large changes in exchange rates which in turn have implications for BAPACO's profitability.

A large devaluation in pulp and paper producing countries (such as Indonesia) relative to the Dong would have a number of implications. First, it would make paper imported into Vietnam appear cheaper, putting downward pressure on the prices received by BAPACO. But it would also make imported pulp appear cheaper, offsetting to some extent the decline in price.

A 20 per cent foreign devaluation (hence appreciation of the Dong) would decrease imported pulp prices by around 20 per cent. Assuming no change in the price of paper, this would increase the NPV of the mill by between 40 and 50 per cent (depending on the discount rate). While this could be offset by a 4 per cent decline in the unit price received by the mill, the mill would still break even in present value terms even if the price fell by 13 per cent (with a discount rate of 5 per cent) or 10 per cent (with a discount rate of 10 per cent).

### The future price of logs

As Vietnam develops, it is possible that the real price of logs will increase. This may result, for example, from increasing wages for forest workers or



from an increase in the price of land generated by alternative and more profitable cropping opportunities. As the mill expands, it will need to get access to more and more logs, and may need to offer a higher price to induce this additional supply.

The price of logs would need to increase by more than 70 per cent (relative to their current value) and then remain at that price for each year of the mill's future operation to drive the mill's profit stream to zero and destroy its financial viability.

### Some combinations of events

There are many plausible scenarios that can be written about how the key external drivers of Bai Bang's profitability – the world price of paper in US dollars, the exchange rate between the dong and the US dollar, the effective tariff on imported paper and the price the company must pay for its logs – will change over the medium to longer term. One possible scenario has the following dimensions.

- world price of paper declining by 1 per cent per year in real terms;
- an exchange rate of VND16 000 to the US dollar (30 per cent devaluation relative to 1997 and 45 per cent devaluation relative to 1996);
- an effective tariff on imported paper declining from 20 per cent now to 5 per cent from 2006 onwards; and
- prices for logs about 20 per cent above current prices.

Under these assumptions the dong price of paper increases significantly despite the fall in the US dollar price and the decline in tariff. The price increase is more than sufficient to offset the increase in the price of logs and the cost of imported pulp for the mill to remain profitable over a 20 year projection period.

A second scenario which we analyse involves:

- world price of paper declining by 1 per cent per year and effective tariff on imported paper declining from 20 per cent now to 5 per cent from 2006 onwards;
- prices for logs 30 per cent above current levels; and
- the dong remaining at its 1996 level against the US dollar (US\$1 = VND11 100).

Under this scenario the mill would need to achieve productivity improvements of 3 per cent per year to break even (discounted present value of revenues to equal discounted present value of costs) over a 20 year projection horizon. The required rate of growth in productivity is small relative to the scope for productivity gains at the mill.

# 9 Achievement of objectives

All the stated objectives for the Bai Bang project and its side projects have been met. Paper is being produced, and the mill and forestry operations seem to be operating on a sustainable basis. Implicit political objectives are also likely to have been met, although it is not clear that Sweden has translated the goodwill created by the project into strong commercial ties. Whether Sweden or Vietnam got value for money for the SEK6.5 billion (in 1996 prices) depends on what the alternative uses of the funds were and the valuation placed on the broader and more intangible benefits of the project.

DID THE BAI BANG PROJECT achieve all the objectives set during its life? Did the side projects achieve their objectives? How do the project's achievements line up against Sweden's financial contribution? Most of the answers to these questions lie in the assessments of the project presented in earlier chapters. But, like all large development cooperation projects, Bai Bang embraced a range of implicit objectives, which shifted over time as perceptions of the role of development cooperation altered and as challenges and opportunities emerged to confront the project.

Chart 9.1 shows how the explicit objectives for the project (as built into project memoranda) evolved over time. The design and implementation of the project would also have been influenced by the general objectives for Sida's development cooperation activities and a range of implicit aims related to broader domestic and international concerns.

## Achievement of explicit objectives

### Raise living standards by increasing domestic production of paper

The assessments presented in chapters 2 and 7 confirm that the overriding objective has been met along with the project objectives identified at project outset. However, the delays in meeting breakeven production levels mean that the benefits to Vietnam have been less valuable than originally envisaged. (Early project documentation spoke of achieving the turnkey position in 1978 rather than 1982. An evaluation of the project carried out in 1982 forecast

## 9.1 Evaluation of project objectives

1973

### **Initial overriding objective**

To satisfy the country's demand for paper from domestic production by expanding the existing paper industry

### **Project objectives**

- Investment in a pulp and paper industry
- Development of forestry activities, harvesting and transport
- Development of social infrastructure such as housing, roads and dispensaries

### **Subsequent objectives**

#### **Main project**

#### **Side projects**

1980

- Align all parts of the mill and put them into production
- Establish a Vietnamese organisation able to run the mill independently

1983

#### **Overriding objective**

- Raise the standard of living in Vietnam by increasing the supply of paper, mainly for educational purposes

#### **Project objectives**

- Complete investment phase and start operations
- Improve conditions so that Vietnam can run the operation independently in a rational, smooth and viable manner, and thereby slowly increase its production of paper

#### **Housing project**

- Supply employees with housing of good Vietnamese standard

#### **Training project**

- Prepare Vietnamese labour for employment at the mill

#### **Transport project**

- Ensure transport facilities to and from the project

1984

#### **Overriding objective**

- Through production of paper mainly for educational purposes, contribute to an increased standard of living

#### **Project objectives**

- Create feasible conditions for sustainable operations by Vietnamese management
- Create forestry organisation capable of supplying mill with enough fibrous raw material in an environmentally acceptable manner

1986

#### **Soil and conservation project**

- Ensure raw material supply to mill
- Maintain ecological balance
- Engage population in forestry to increase firewood supplies

#### **Training project**

- Ensure availability of operational and maintenance personnel with basic education at level appropriate for modern processing industry

1991

#### **Technical Assistance Program**

- Assist Bai Bang Paper Company in its transition to a free market economy

that the mill would reach capacity annual production of 55 000 tonnes in 1986 rather than 1996.)

The mill produced in the range of 30 000 to 35 000 tonnes of paper for the first time in 1986. It has sustained rates at or in excess of this target since the Swedish advisors left in 1990. In 1996 production exceeded the design capacity at the mill. So the domestic production target has been met. The mill appears to be financially viable in that it is able to finance from the retained profits the additional investments required to maintain and increase production. The economic viability of the mill – its ability to remain profitable in an environment of no industry assistance – is not such a clear cut issue. This is because the mill benefits from protection against imports and the range of privileges that are accorded to state owned enterprises in Vietnam. These privileges are, however, offset in part by the constraints on commercial operation of the mill caused by its relationship with VPC.

Domestic paper production capacity and output are now much higher than they would have been without the project (assuming that other pulp and paper projects would not have taken Bai Bang's place). On balance, this additional production is currently contributing to a higher standard of living in Vietnam. The snapshot cost–benefit analysis reported in chapter 7 indicates that the project generated net benefits to the community in 1996 ranging from VND23 895 million to VND145 857 million. If these net benefits had been negative, it would have been possible to conclude that, while the project had increased paper supply, it reduced standards of living because the resources employed could have generated a better return in other uses.

Swedish aid, and the Vietnamese contribution, could perhaps have been used on activities with higher returns. However, while it is possible that other projects might have generated higher benefits to Vietnam, it is highly unlikely – given the small quantum of Vietnamese resources used in the project – that the project has reduced overall Vietnamese living standards over its life.

## Subsequent objectives

Additional and amended objectives were articulated over time with the conclusion of successive contracts with the companies involved in implementation of various stages of the project and with the initiation of the various side projects. As project implementation proceeded, significant technical, social and economic challenges were encountered. This required emphasising previously under-emphasised or subsidiary objectives. In addition, shifts in the focus of Sida's general development cooperation program were mirrored in additional objectives set for the project.

Broadly speaking, these additional objectives have all been met.

- BAPACO is running the mill now more effectively than at any stage when it was reliant on Swedish advisors.

- Overall, the forestry system is supplying the mill's fibrous raw materials – with positive environmental impacts through the extensive reforestation that has been occurring.
- Mill employees enjoy housing standards equal to or better than their counterparts throughout the economy.
- The training system – especially the Vocational Training School – is producing well qualified workers across the range of skills required by the paper industry.
- The transport problems experienced in the early stages of the project have been countered.
- BAPACO was, compared with nearly all other state owned enterprises, reasonably well equipped to operate in the new environment created by the transition to a market economy. But the constraints imposed by VPC jeopardise the viability of the company, reflecting more than anything else the incomplete nature of the transition. It also reflects the difficulties of state owned enterprise reforms and the conflicts created as Vietnam tries to reconcile market orientation with a continued socialist ideology.

An important explicit objective on the Vietnamese side was that of transfer of modern technology – to obtain a substantial upgrading of Vietnam's technical capacity to produce pulp and paper. This objective has been achieved.

## Implicit objectives

The creation of a viable mill and forestry operation in the face of very difficult circumstances is attributable in large part to the enormous determination of successive Swedish governments to make the project a success. While stubbornness has been identified as a national characteristic, the commitment of the Swedish agencies and companies to making the project work, backed up by a willingness to commit large expenditures, probably exceeds normal Swedish resolution. Similar Swedish projects in other countries with less daunting objective constraints have failed. The success of Bai Bang is probably attributable to the weight given to implicit objectives associated with the project.

Bai Bang was the flagship of Sweden's efforts to demonstrate solidarity with the Vietnamese people in their efforts to end foreign intervention and later to unify the country. As such, it had great political and, in the early days at least, popular support.

Did the project meet underlying strategic and political objectives? Sweden's early commitment to Vietnam sent a strong signal of the nation's foreign policy stance during the 1970s and may have yielded a significant payoff in cementing Sweden's desired alignment during the Cold War.

In a narrower sense, the Bai Bang project certainly yielded significant benefits to the pursuit of Sweden's bilateral relationships with Vietnam. The knowledge

that Sida gained about Vietnamese institutional, social, political and economic structures as the project worked its way through successive regions of – for Sida – uncharted territory, placed the organisation in a strong position to develop other cooperation activities.

Bai Bang equipped Sweden to assist Vietnam in the ongoing process of *doi moi*. The project almost certainly made a direct contribution to the thinking behind elements of *doi moi*. As chapter 5 points out, Vietnamese agencies involved in shaping state owned enterprise reforms were involved in the attempts to inculcate the Scandinavian management model at BAPACO. More generally, the knowledge and goodwill created by Sweden's commitment to the project earned Sweden an important 'place at the table' as a trusted source of advice on the transition to a market economy.

Promotion of Swedish commercial interests would also have been an important implicit objective of the project. The choice of forestry related activities for the flagship project meant drawing upon technologies in which Sweden specialised – increasing the likelihood that Swedish companies would win a significant share of the business created by the project. In the event, some 85 per cent of the project outlays was paid to Swedish companies for supplying equipment and services (Sandgren 1990).

Expectations about the outcomes of the project would also be shaped by the broader structure of Sweden's aid program for Vietnam and overall development cooperation objectives. Given the very large expenditures on the project – and the fact that the bulk of these expenditures were beyond initial estimates – the project had a significant effect on the structure and direction of Sweden's development cooperation program. If additional expenditures were financed by reallocating funds from other aid projects, or from other expenditure programs, then Bai Bang may have negatively impacted on the pursuit of other development cooperation or domestic socioeconomic objectives. In practice, it seems that Bai Bang made it possible to meet ambitious aid delivery objectives during the 1970s and early 1980s where there was growing pressure to identify projects to which resources could be allocated and disbursed.

## Achievement of objectives relative to the Swedish financial contribution

Do the current achievements represent value for money for Sweden and for Vietnam? Answering this question properly revolves very much around the issue of alternatives, and the evaluation of the internal and external benefits generated over the life of the project. It is not readily answered by the snapshot analysis around which the evaluation in this report is structured.

The net benefits that Vietnam received from the production of paper at the mill and associated processes in the production chain in 1996 have been estimated using two different techniques:

- the economywide model analysis (chapter 4); and
- the social cost–benefit analysis (chapter 7).

Each type of analysis incorporates components the other does not have. In particular, the economywide analysis incorporates multiplier effects and the social cost–benefit analysis incorporates public benefits and costs.

The value for money question could be addressed in part by asking: would Vietnam be receiving higher benefits if the Swedish and Vietnamese resources committed to the project over the years have been put to other uses? Nearly a quarter of a century after the key decisions on Bai Bang were made, it is hardly possible to assess what other uses were possible – either then or at later stages when decisions were made to commit additional resources to the project. And value for money does not seem to have been an issue uppermost in Swedish or Vietnamese minds at key decision points.

There is one crude measure, though, of alternative uses. What if the Swedish funds had been invested in low risk financial investments and the interest used to finance general imports into Vietnam? The SEK6.5 billion (in 1996 values) expended on the project could have earned a rate of interest of around 8 per cent in 1996 if it had been invested in Swedish treasury bills. This would have made some SEK495 million available to finance imports, equivalent to around VND820 billion. This is over five times the estimated net benefit estimated in 1996 from the social cost–benefit analysis and nearly twice the national income benefit estimated from the economywide model.

While this provides a possible benchmark against which to test the value for money question, it does not represent a practical alternative – it would not have been acceptable to either the Swedish or the Vietnamese authorities. And there are also some important qualifiers to this comparison.

First, from the Vietnamese perspective, the real value of the resources transferred to Vietnam may have been less, perhaps much less, than SEK6.5 billion. It is distinctly possible that the supplies of consulting services and equipment earned excess profit from project contracts. Vietnamese accountants valued the equipment installed at BAPACO in 1996 at much less than its cost to the project. Cost padding is not unusual in aid contracts and the project structure, using the principal contractor rather than an independent consultant to advise Sida on project issues, would have reduced pressures to contain costs. And there are numerous accounts of equipment being damaged, stolen and redirected from Bai Bang to other parts of Vietnam. It would seem unfair to ‘charge’ this against the Bai Bang project.

At the same time, there are significant spillover benefits from the project that have not been captured in the cost–benefit analysis. For example, the major reforestation efforts now underway in northern Vietnam may not have occurred as quickly and as effectively without the mill demonstrating a monetary value for timber. Less tangible, but perhaps more valuable, without the project the Vietnamese authorities would not have had an operating



*Swedish solidarity movement demands that USA stops bombing Vietnam in May 1972. Photo © Jan Collsjö/Pressens bild AB.*

example of a commercially oriented industrial enterprise to turn to when designing key reforms being implemented under *doi moi*.

From the Swedish perspective, the question boils down to how the implicit objectives are valued and how well they are judged to have been met. Issues here include:

- the values placed on having demonstrated solidarity with the Vietnamese people; and
- the benefits for Sweden of gaining a prominent ‘place at the table’ in the dialogue with Vietnam and from being able to shape a more effective development cooperation program from the lessons learned about conditions in Vietnam (probably not an objective at the beginning of the project).

Also important are the commercial benefits that Sweden has gained from the project. There are two main elements to possible commercial benefits. The first is the reflows to Swedish contractors. Whether these reflows delivered a genuine benefit to the Swedish economy is not clear – depending upon the possible alternative uses of the resources devoted to meeting the contracts. But there was most probably a benefit to the companies involved.



The project may also have generated commercial benefits by facilitating entry for Swedish companies into Vietnamese markets, either as exporters or investors. In practice, it does not seem that Swedish companies have taken as much advantage of the goodwill created by Bai Bang as might have been expected. By the end of 1996, cumulative foreign direct investment projects originating in Sweden accounted for just 1.4 per cent of the registered capital of all foreign investment projects licensed in Vietnam since 1988 (table 9.2). Similarly, Sweden accounted for less than 0.3 per cent of Vietnam's imports in 1995.

9.2 Foreign direct investment in Vietnam by country of origin 1988-96					
Country	Number of projects	Registered capital	Country	Number of projects	Registered capital
	No.	US\$m		No.	US\$m
Singapore	151	4 322	Switzerland	21	551
Taiwan	286	3 917	United Kingdom	22	524
Hong Kong	247	3 117	<b>Sweden</b>	<b>8</b>	<b>375</b>
Japan	177	2 400	Indonesia	17	316
Korea	192	2 261	Bahamas	1	264
British Virgin Islands	53	1 486	Philippines	19	200
Australia	67	1 074	Russia	56	191
France	98	979	Bermuda	6	182
USA	62	849	Cayman Islands	5	170
Malaysia	56	774	Canada	22	164
Thailand	94	761	Germany	23	161
Panama	6	665	Others	148	708
Netherlands	31	560	<b>Total</b>	<b>1 868</b>	<b>26 971</b>

Source: GSO (1997).

# 10 Is the project relevant today?

As incomes grow in Vietnam, so does demand for paper. The project is helping meet this demand in a sustainable fashion, and its technology, while capital intensive, seems consistent with Vietnam's needs. Hills denuded of trees after the war are now being reforested, as the work on forestry interacts with changes in land tenure arrangements. The mill has been relatively well placed to cope with Vietnam's increasingly market-based approach to economic management. It faces problems, however, because reforms to the SOE system still have a long way to go. Moreover, the mill is currently sheltered behind high protection, and may face difficult adjustment problems as this protection is phased out.

HOW RELEVANT TO VIETNAM is the project today, given the great changes that have occurred in the 25 years since preliminary work began? How do the structure and management of the mill and the forestry system fit in with the policies and reforms that are being implemented under *doi moi*? In which areas is the project helping meet Vietnam's main economic and social policy objectives as the country enters the 21st century?

When the government of Vietnam decided in 1986 to initiate the comprehensive program of restructuring and renovation known as *doi moi*, it began a process that would fundamentally alter the economic landscape. Profound changes have occurred in the institutions and policies surrounding the forestry and paper industries. Many aspects of the project that had fitted poorly into the old system found a much more congenial environment, and helped the mill thrive in ways that may have seemed impossible before the last Swedish adviser left Bai Bang. But these changes also embraced a shift away from self-reliance and autarky, and opened up the option of relying on foreign suppliers to meet the country's demand for products like paper.

The project's relevance to Vietnam today revolves around five issues:

- Vietnam's need for paper – has an expansion in paper production capacity been consistent with the country's consumption priorities as the economy has developed;

- the sustainability of the forestry base for the project – have the investments in plantations and associated technology proved to be consistent with sensible uses for the land and other resources that are involved;
- the mill technology – is it proving to be appropriate in the current environment, and consistent with Vietnam’s underlying comparative advantage;
- the commercial orientation of the project – was the investment in inculcating the Scandinavian management model worthwhile; and
- the overall competitiveness of the project – is paper production at the mill an efficient use of Vietnamese resources?

Before addressing these issues, it is important to understand the scope and depth of the changes in economic management that have been occurring in the last decade.

## Vietnam’s economic reforms

*Doi moi* was not the first attempt at economic reform in Vietnam. In the decade following formal reunification of Vietnam the central planning system came under great stress, prompting experiments with reform and partial liberalisation. In 1981, for example, the government responded to a partial breakdown of the system with limited reforms, including a contract system for agricultural production, legalisation of ‘fence breaking’ by enterprises – allowing some autonomy to trade in the open market after meeting centrally planned targets – and some flexibility in setting salaries. But these changes were insufficient to address the economic stagnation and macroeconomic instability that characterised the period.

In 1986, the Sixth Party Congress adopted a program of major reform of the system of economic management. This reform recognised the need to abolish the system of ‘bureaucratic centralised management based on state subsidies’, and the move to ‘a multisector, market oriented’ economy that included a role for the private sector. The decision in 1986 to undertake a comprehensive restructuring and renovation process was made in the context of a gathering economic crisis. Partial liberalisation had failed to deal with more deep rooted problems, and unsuccessful attempts to reduce macroeconomic imbalances failed to stem a growing fiscal deficit and accelerating inflation.

The initial focus of reforms was on transforming economic institutions. Prior to the Congress, a number of decisions were issued on the family economy and the role of private cooperative and state sectors in agriculture. Administrative constraints on private sector activity and domestic trade were gradually relaxed, allowing rapid development of private markets for agricultural goods. In 1987 and 1988, the administrative structure was rationalised and streamlined, and price reforms were accompanied by a

reduction in rationing. Reforms in land allocation and the land use right system formalised fundamental changes in the agricultural sector.

The reform process gained momentum as the crisis persisted, culminating in a comprehensive break with the old system in 1989. Major institutional and structural reforms were implemented. Some of the key elements of the restructuring and renovation process are listed in box 10.1. These structural changes have been accompanied by a strong stabilisation effort involving hardening SOE budget constraints, increasing revenues, containing expenditures and strengthening controls over monetary expansion. This effort ended a long period of hyperinflation, and increased confidence in the dong and in the emerging financial system. The government has sought to cement Vietnam's entry into the multilateral and regional trading system, and to regularise bilateral trading relations.

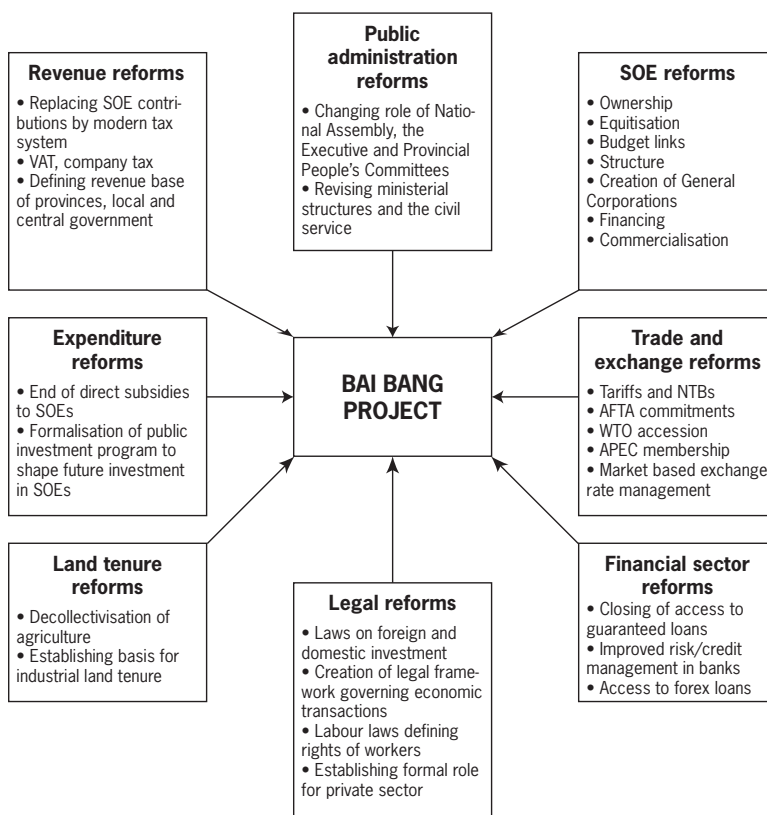
#### 10.1 Key elements of the restructuring and renovation process

- Reversal of the process of collectivisation of agriculture by granting individuals and families long term rights to use land
- price liberalisation to eliminate the 'two price' system that prevailed under central planning, and removal of barriers to internal trade
- steps toward creation of a modern banking system, by splitting off the commercial banking functions of the State Bank, and facilitating establishment of new foreign and domestically owned banks
- partial liberalisation of foreign investment and international trade
- foreign exchange market reforms and shifting to a more market determined exchange rate system
- reform of the state owned enterprise system through enterprise restructuring, introduction of new approaches for management and oversight, and changing the relationship between SOEs and the budget and the financial sector
- formal acceptance of the private sector and creation of a legal framework for the functioning of a corporate sector
- budgetary reform, to change the basis of revenue raising to a more modern system of taxation, and adoption of a more formalised expenditure planning and control system

Chart 10.2 shows some of the main reforms that are affecting the operations of BAPACO.

- Trade and exchange reforms have opened the economy to international trade and foreign investment. The imperatives for domestic production of key commodities and reliance on aid to fund import of capital and foreign technology have been diluted.
- A market determined exchange rate has profoundly altered the relative prices of tradeable and nontradeable goods. These reforms have had a marked effect on BAPACO's operations. Before the reforms BAPACO was forced to export to earn foreign exchange to enable it to purchase imported inputs. Now it can exchange dong from domestic sales for foreign currency.
- SOE reforms are changing the structure of the SOE sector, its governance and links to the budget and the financial sector. They are also attempting to place nonpublic service enterprises on a fully commercial footing and in some cases, equitising them. At the same time, the reform process has involved the

## 10.2 Economic reforms impacting on the relevance of the Bai Bang project



creation of general corporations, such as VPC, with the supposed intention of assisting in the rationalisation of SOEs, facilitating the termination of line ministry control, and realising economies of scale in management. In practice, however, the formation of these corporations has had rather different effects. The creation of VPC has been associated with a diminution in the autonomy and commercial functioning of BAPACO.

- Under its process of financial sector reform, Vietnam is creating a modern financial sector out of the old monobank system. SOEs are increasingly only able to access credit on commercial terms but are also able to tap into a wider range of financial investments, including foreign exchange borrowings. BAPACO, like other SOEs, is now subject to increasing financial discipline as a result of these changes.
- Revenue and expenditure reforms are changing the basis for funding the activities of central, provincial and local administrations, and changing the interface between SOEs and the budget. Over time this could have important implications for the financial viability of BAPACO and the way it interacts with the agencies of government.

- Legal reforms are establishing the legislative framework for the operation of a market economy and providing a basis for legally enforceable contracts. Laws on foreign and domestic investment mean that alternatives to state investment in commercial sectors are now viable. These reforms are also establishing the rights of workers and the nature of employment contracts.
- Land tenure reforms are having a profound impact on agricultural and rural activities, and potentially could have important effects on BAPACO's access to workers and raw material as alternative occupations and uses become easier to pursue. For example, allowing farmers to rent land for forestry activities for up to 50 years and reducing government controls on the growing of logs has led to a strong move toward agroforestry and greatly increased the potential supply of wood to the mill.
- Public administration reforms are changing the roles of the organs of the state, and redefining responsibilities and functions of the various agencies.

Three elements of these reforms are having a particular impact on the Bai Bang project – land tenure reforms, trade and investment liberalisation, and SOE reform. Their implications are discussed in more detail below. However, the fundamental break with the system of central planning, and the reliance on the price system to shape the allocation of resources have forced enterprises like BAPACO to become market sensitive in ways that were not contemplated in 1975.

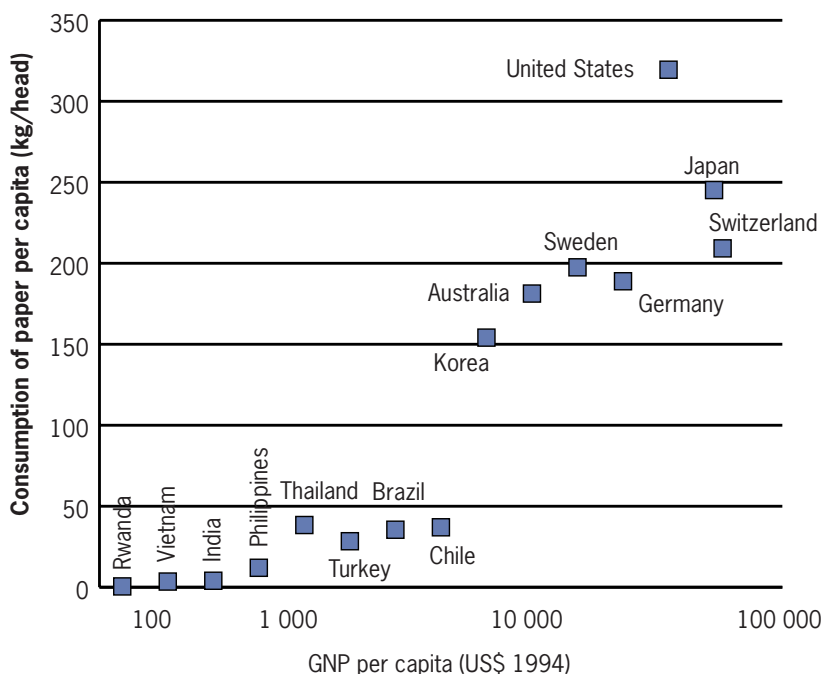
The reforms implemented under *doi moi* have served to create an environment much better suited to a large commercial operation based on exploitation of the nation's forestry resource than was the case when the project was developed. In fact, the recent good production and financial performance of the mill would not have been possible without the reforms. In many ways, the project is more relevant today than it ever seemed likely to be during the design and development stage.

## Vietnam's demand for paper

In the early 1970s, when the Bai Bang project was being planned, Vietnam was desperately short of paper. Total annual paper production in the north was about 25 000 tonnes – about 1 kilogram per head of population. The project enabled Vietnam to substantially increase its paper production capability and has made a major contribution to the future development of this sector of the economy.

Vietnam is a low income country experiencing rapid growth in per capita incomes. As countries get richer, paper requirements increase. This is shown in chart 10.3, which traces the relationship between per capita income and per capita paper consumption across countries. The chart suggests that the demands by Vietnamese citizens for paper will escalate rapidly over the next decade should Vietnam's strong growth continue. These paper demands will need to be satisfied through a combination of expansion in domestic production and imports.

### 10.3 Per capita GNP and paper consumption



Data source: Matussek and Stefan (1996).

Vietnam's 27 pulp mills and 93 paper mills have a current annual production capacity of about 240 000 tonnes of paper and 173 000 tonnes of pulp, with Bai Bang being by far the most important contributor to this production. Remaining needs are met by imports. By the year 2000 per capita consumption of paper will have reached between 4 and 5 kilograms per year, rising sharply to about 12 kilograms per year by 2010.

The Bai Bang experience – in particular, the acquisition of the full range of skills and experience in domestic pulp and paper production, and the establishment of a successful program of plantation development – has provided Vietnam's paper industry with the confidence to tackle an ambitious domestic production expansion to help meet the increase in demand. This experience has also shown that Vietnam has a number of positive features that should facilitate the development of its domestic paper production capability.

- It has a large forest region with climate and soil types capable of generating rapid wood fibre growth – trees such as acacia, styrax and eucalyptus can be harvested for pulp logs on relatively short rotations of 8 to 10 years.
- It has a large, hardworking rural workforce located in these regions – plantation development is labour intensive.

- It is well advanced in developing a technology and management system for exploiting its wood resources in a sustainable way.

VPC (which is driven by executives who gained their industry experience at Bai Bang) has ambitious production plans for the future. A production target of 300 000 tonnes of paper per year has been set for the year 2000, with Bai Bang producing one third of this. The target for 2010 is 1.2 million tonnes, with production at Bai Bang exceeding 200 000 tonnes.

The major constraint to achieving this expansion in production is money to finance the new investment required. Paper mills are highly capital intensive. To boost Bai Bang's capacity from 48 000 tonnes to 61 000 tonnes of pulp and from 55 000 tonnes to 100 000 tonnes of paper by 2000 involves a VND844 billion investment. To meet VPC's production target for the year 2000 of 300 000 tonnes of paper will require investment capital of over VND1500 billion. Under VPC's strategic development plan 85 per cent of this capital will be from foreign sources. The expansion at Bai Bang is to be debt funded through supplier credits or other forms of financing. For other projects the corporation sees joint ventures as the likely investment vehicle.

The extent to which the domestic economy will benefit from this expansion will depend initially on the extent to which domestic paper production is exposed to international competition. VPC's production plans envisage a continuation of protection against imports for the sector to 2006, after which Vietnam's AFTA commitment will have required elimination of non-tariff barriers and a reduction of tariffs on imports from ASEAN countries to a maximum of 5 per cent.

Future demands in excess of domestic production will be sourced from imports. Global demand for wood fibres is projected to grow steadily over the medium to longer term. Most forecasters are expecting global pulp and paper demand growth of between 2 and 3 per cent per year (average of around 2.6 per cent) to form a substantial part of this wood fibre demand growth.

Some forecasters are expecting a significant global wood fibre deficit to emerge by 2010. Any deficit will be closed by:

- increased use of recovered paper;
- increasing supplies from existing and new plantations; and
- reduced demands through substitution with other products.

Unlike Indonesia, whose rapidly growing pulp industry will have to rely on native forest fibre because of inadequate supplies of plantation wood, Vietnam's growth plans are based around plantation wood.

The strong global outlook for wood fibre demand is likely to make Vietnam's growing plantation industry increasingly valuable. The challenge for Vietnam's paper industry is to convert this wood fibre into paper in commercial operations that do not require protection against imported paper to ensure their viability.



## The forestry base

As discussed in chapter 3, the current supply of logs from the raw material area is more than sufficient to meet BAPACO's requirements. VPMC alone has around 43 000 hectares under plantation, sufficient to support capacity production at the mill, and there are substantial supplies available from private growers, which already meet a significant share of the mills needs.

The material supply position is thus markedly different from the situation when the project was still receiving Swedish support. Plantation development in the raw material area has accelerated over the past five years. This is attributable to a number of factors linked to the project and the economic reforms.

The main impact of the reforms has been through improvements in land tenure arrangements, which have led to the allocation of state forest land to private individuals. The new arrangements, which can provide secure tenure for up to 50 years, provide private farmers with a strong incentive to engage in farm forestry. The reforms have also made it possible to experiment with alternative forms of land contracts based on subsidised seedlings, extension services and revenue sharing arrangements with government and local authorities. Together with changes in the pricing system (allowing market valuations to shape log prices), these reforms addressed some of the financial constraints that farmers and forest workers would otherwise face.

These changes have removed many of the impediments that stood in the way of forestry development in the 1970s and early 1980s. However, the project itself made a very important contribution by establishing a sustained, commercial demand for logs. The benefits of reforestation may have been much more difficult to pursue without the mill providing clear signals of the returns to be made from growing trees.

## Mill technology and management

One of the big concerns about the project was that it involved establishing – in a low income, largely undeveloped, labour intensive, centrally planned economy – a sophisticated, capital intensive industrial complex designed for commercial operation in an industrialised economy. Past and concurrent experience with other industrial projects being developed in cooperation with the Soviet bloc provided little reason to be optimistic about the adaptability of the project to the prevailing system.

However, as discussed in chapter 2, technically, the mill is performing at acceptable levels. It is a reasonable example of a *national* mill oriented toward the domestic market. There are now more sophisticated and capital intensive industrial plants in operation in Vietnam – although few are run without joint venture arrangements with foreign partners. Vietnam remains an economy with a strong comparative advantage in labour intensive activities. However,

it is also becoming clear that it has a comparative advantage in growing pulp logs. A capital intensive mill may still be consistent with the country's overall resource endowment, if it is the appropriate way to exploit the capacity to be an economically efficient grower of logs.

There are some aspects of the mill design that with hindsight would not be replicated. These include the provision of only one power boiler, and the mismatch between the capacities of the pulp and paper units. The mill was also designed to provide relatively low quality paper in an autarkic economy, where the need to match the quality of internationally traded product was not considered. This has meant that additional investments have been required as the markets demands have changed – especially the demand for higher quality paper for copying and computer printers.

Fortunately, the liberalisation of trade and exchange policy, and opening up the economy to foreign investment has meant that BAPACO is able to address investment and capital importation requirements on a reasonably commercial basis. Before *doi moi*, the mill was obliged to find export markets for its output in order to acquire foreign exchange for imported equipment. Now, it can (in principle, at least) purchase foreign exchange from its bank.

### Mill management

Another major decision element in the project concerned the choice of management models to be associated with the mill. During the 1980s the Swedish advisers and Vietnamese managers struggled to implement a commercially oriented management system in the context of a centrally planned, subsidy economy.

These efforts were aimed at establishing management systems and cultures consistent with an operating environment for the mill in which it would:

- have immediate access to its own funds and customer revenues without higher approval;
- be able to decide independently how it uses the money and other resources at its disposal;
- be subject to strong financial constraints – the need to generate cash flows and accounting profits to guarantee survival; and
- take responsibility for the outcomes of its decisions, with closure or takeover as a consequence of too many mistakes.

This approach to management has become increasingly relevant as Vietnam has pursued deeper reforms to the state enterprise system. In fact, familiarity with commercial management methods has placed the mill in a good position to adapt to the new environment created by the reforms. However, as discussed below, there are many feature of the state enterprise system which continue to constrain fully commercial operations at Bai Bang.



*Special orders are prepared by women in the mill.*

*Photo: A Berlin.*

## Competitiveness

The project was not originally designed with international competitiveness as a major – or even incidental – consideration. However, with the steps being taken to integrate Vietnam into the regional and world economy, the ability of the mill to meet international competition with minimal government assistance is becoming a concern. And the economic efficiency with which the mill uses the nation's resources should always have been a concern, even if not explicitly addressed in the project objectives.

While all of the policy changes described above are impacting on the project, policies towards state enterprises and toward trade and exchange are having direct effects on the competitiveness of BAPACO.

### State enterprise policies

Early state enterprise reforms introduced around 1986 aimed at increasing autonomy and profit orientation in SOEs, reducing budgetary support and the role of central plan direction. While the enterprises remained under ownership of the people, their assets were placed under the management of

the workers and directors. A second wave of reforms starting in 1991 focused on reorganising and consolidating the state enterprise sector. A large number of small enterprises were liquidated or merged with other businesses. The Law on State Enterprises introduced in 1995 established SOEs as separate legal entities with limited liability, and clarified responsibility and accountability regarding management and exercise of ownership rights. The law brought state enterprises much more into line with the concept of a commercially oriented enterprise on which the Scandinavian management model was based. In particular, the law:

- clarified rights regarding the establishment and dissolution of SOEs and the role of the government in the exercise of ownership rights in these enterprises, which can be delegated to central government ministries or the people's committees of provinces and municipalities;
- defined the rights and responsibilities of SOEs, including rights regarding divestiture and equitisation, and the disposition of assets;
- defined rights and responsibilities of chief executives and boards of management;
- required SOEs to produce annual reports, including financial reports, and to be subject to audits; and
- clarified the rights of chief executives in day-to-day decision making, the rights to consultation of the workers' collectives and the role of state management agencies.

The government has also initiated a process of equitisation, through which workers and other interested parties are able to take stakes in selected enterprises, and more recently established the legal framework for leasing and outright divestiture of enterprises. To date, equitisation has been fairly limited, and restricted to small businesses. It is not envisaged to include BAPACO.

Another important element of the restructuring of the state enterprise system was the process of creating state corporations (of which VPC is one). Some eighteen general corporations and 64 smaller special corporations have been formed since the enabling legislation was introduced in 1994, with hundreds of enterprises becoming members of a corporation.

### Trade policies

Vietnam's approach to international trade has changed profoundly since the 1980s. The country's earlier approach to economic development focused on self-reliance. Foreign trade was subject to central planning decisions and carried out by a few state trading enterprises that monopolised classes of products. International prices had little effect on domestic prices and foreign exchange was allocated through a complex system involving multiple exchange rates. Imports were controlled through licenses, quotas and administrative controls, and exports were largely driven by government negotiated quotas.

Trade is now much more market driven. Liberalisation of the trade and exchange system has proceeded on five main fronts:

- phasing out of foreign exchange controls and adoption of a more market oriented exchange rate policy; accompanying large scale restructuring of the financial system;
- relaxation of controls on entry into foreign trading activities;
- relaxation of controls used to manage imports and exports;
- creation and amendment of a system of taxation of imports and exports, as part of a comprehensive change in the revenue raising system; and
- joining regional and multilateral trading arrangements.

These actions have accompanied efforts to create a legal and regulatory framework to permit and encourage foreign investment.

Despite these actions, which are described in more detail in appendix 10A, important features of the old regime linger on. An intricate framework of administrative and legislative barriers to trade is still in force. Current account payments – interest, profit repatriations, etc. – are still not free of restriction, and capital repatriation for foreign investors is not guaranteed. Imports of key inputs and consumables are controlled according to administrative assessments of the balance between domestic demand and domestic supply. The import tariff system provides high levels of protection to a range of local production, and is subject to frequent changes and inconsistent implementation.

More fundamentally, trade is still manipulated with a view to its effects on other aspects of economic and enterprise management. State owned enterprises play a leading role in the economy, and remain important sources of resources and influence for central, provincial and local authorities and agencies. The interests of SOEs play a disproportionate role in the determination of trade policy, a situation facilitated by the continued close links between certain enterprises and policy making ministries. But at the same time it appears that trade policies are shaped with a view to controlling SOEs in the absence of full fiscal and financial disciplines as well as to restraining competition and maintaining SOE revenues.

Paper is one of the products for which imports are closely controlled – imports of the type of paper products made by BAPACO and other mills are subject to bans from time to time, and the tariff has been raised to 40 per cent. However, under its obligations as a member of the ASEAN Free Trade Area (AFTA), Vietnam is expected to eliminate quantitative restrictions on paper imports by the beginning of 2003, and reduce the tariff on imports of these products from ASEAN countries to 0 to 5 per cent by 2006.

### **Implications for the project**

The implications for BAPACO and its suppliers of the trade and state enterprise reforms implemented to date are rather mixed.

The paper industry remains somewhat insulated from the world market, because of the frequent use of quotas and prohibitions on imports of competing products. However, the impact of these controls on BAPACO's ability to set prices in excess of world prices and for the industry to sustain much higher levels of production is somewhat constrained. Paper is one of the products that is explicitly managed by central authorities to (supposedly) maintain financial and commodity balances in the economy.

For these products, the Ministry of Trade, in consultation with the Ministry of Planning and Investment and relevant line ministries, develops an annual plan for imports based on assessments of likely demand and local production. A physical quota/target for imports is announced, and the right and/or responsibility to import set amounts is allocated to selected enterprises. But once an importer receives a license to import paper there are no checks on how much paper is imported under license. And some foreign paper is also smuggled into Vietnam.

The approach to managing trade in this way causes a number of problems. The signals sent to producers and would-be producers seem to be that their market may be guaranteed, regardless of price or quality, if sufficient capacity is installed. This may be a particularly serious problem when new investments are being contemplated, especially since all of the products affected are produced by state enterprises or foreign joint ventures with state enterprises.

As noted by Kokko and Zejan in a 1996 recent review of developments in Vietnam:

...Vietnamese import substitution takes a form that creates strong interest groups that may oppose or delay the eventual shift to more neutral policies. Import substitution is largely carried out by SOEs, often in joint ventures with foreign MNCs, both groups of firms wield considerable political influence and are likely to become powerful supporters of protectionism since they benefit from the rents that are created by the policy. (Kokko and Zejan, 1996)

In some cases where there are strong interest groups favouring access to cheaper products, or to the rents that accrue from access to the right to undertake restricted imports, the policies are often in a state of flux. Sometimes the quotas are set very high, and importers build up stock, expecting that quota in later years may be reduced. In the case of paper, quotas have been replaced by outright prohibitions on imports of paper that can be made in Vietnam. However, such bans are manipulated and exempted on an irregular basis. The effect is that – contrary to stated objectives – the domestic market is destabilised, leading to windfall profits and losses for traders and consumers alike. The paper market, like others subject to this kind of management is constantly subject to what are described in the press as 'fevers', 'gluts' and 'stockpiles'.

The instability in the market, and the continued prospect of adverse policy intervention means that paper producers may not be able to exploit the

protection apparently accorded by the presence of import restrictions.

BAPACO's relationship with VPC also erodes the benefit that BAPACO gains from protection. As discussed in chapter 2, membership of VPC hampers BAPACO's ability to operate on a fully commercial basis in a number of ways.

- It cannot set its prices – all prices are set by VPC – severely restricting its ability to adjust to changing international prices and to adopt marginal cost pricing to meet competition.
- It does not control marketing or most of its sales– the major markets are controlled and served by agents of VPC. And, since VPC sells on a consignment basis, this impacts quite significantly on BAPACO's cash flow.
- It does not retain its depreciation fund – VPC appropriates the fund and allocates according to its priorities.
- It must seek approval for all investment projects from VPC (as well as line and central ministries).
- It is obliged to surrender a share of after tax profits to VPC – a proportion of the various funds to which profits are allocated is taken by VPC.
- It cannot engage in international trade on its own behalf. All imports of inputs are undertaken, on commission, by VPC's trading arm.
- It cannot source its raw materials freely – all fibrous raw material must be purchased through VPMC, another member of VPC.
- It can be obliged to absorb unprofitable members of VPC, and transfer management and staff to other mills in the group.

The restrictions on BAPACO's autonomy are almost certainly impacting on its market position. Unless this situation is changed, the problem may become more severe as Vietnam phases out paper protection according to its international trade agreements.

As the analysis in chapter 8 has indicated, the mill may have to achieve significant cost reductions if it is to break even in net present value terms after protection is phased out. Further and perhaps more radical reforms in the state enterprise management system may be required if the mill is to remain financially viable in the longer term.

# 11 Lessons – understanding conditions for sustainable development

Against many expectations, Bai Bang has proved to be an example of a sustainable development cooperation project. Commitment and perseverance on the Swedish and Vietnamese sides were essential elements of its success. But more important have been the fundamental changes in economic management that occurred as the project developed. The project carried an extensive set of implicit political and strategic objectives that ensured continued funding despite extraordinary cost overruns. It is unlikely that a similar project would be considered today, given the shift in development cooperation paradigm since the 1970s. But it is also unlikely that projects consistent with the new model would have been feasible when Bai Bang was being developed.

WHAT LESSONS ABOUT DEVELOPMENT COOPERATION can be learnt from the Bai Bang project? What are the lessons about the fundamental conditions for sustainable development?

The evaluation presented in this report suggests that the Bai Bang project has met most criteria of sustainability.

- The pulp and paper mill is technically sound and financially viable (when the original capital costs are treated as sunk).
- The handover to local management has been very successful with the mill achieving its best performance long after the departure of the Swedish advisers.
- The forestry activities have helped promote a major reforestation of previously bare hills with limited alternative uses.
- The environmental damage caused by industrial processes is relatively small.
- The training activities have helped expand Vietnam's stock of essential industrial skills, and the Vocational Training School is maintaining a supply of appropriately skilled labour for BAPACO and the paper industry overall.



- The project has produced a significant localised improvement in living standards.
- The mill is probably economically viable, although it is difficult to measure the full effect of the policy distortions surrounding its operation. While protection against imports may be high, other elements of the environment offset the benefit that is accorded by protection. So, by producing paper with a positive social value, the project is helping to improve living standards of the Vietnamese people generally.

The question we are unable to answer effectively is whether alternative uses of the Vietnamese and Swedish resources consumed by the project would have generated a greater impact on living standards. However, compared with many other development cooperation projects, Bai Bang appears to be a success. This leads to the subject of this chapter: what aspects (if any) of the project selection, design, management and implementation processes associated with the project are responsible for this apparent success? In turn this leads to the question: can any answers to this question be used to guide future development cooperation?

## Models of development cooperation

At the outset, it is important to recognise that Sida is unlikely to fund a project like Bai Bang again in Vietnam or anywhere else. This is partly because the approach to development cooperation and the theories of development that underpin it have changed markedly since the 1970s. It is also because, with the increasing reach of private capital flows into developing economies, the case for aid funding of large industrial projects – never strong – has diminished markedly in the last couple of decades.

In the late 1960s and 1970s, when the project concept was being developed, much, though not all, of the development literature focused on the idea that limited availability of physical capital, investible funds and foreign exchange were the major determinants of slower development in some countries.

In this framework, capital intensive projects using large injections of imported equipment seemed to be appropriate vehicles for delivering development assistance. Development was seen to be commensurate with industrialisation so that resources were channeled away from agriculture into secondary industry. Pessimism about the export prospects for developing countries and the emphasis placed on conserving foreign exchange fuelled a strong preference for import substitution strategies for industrial development. And prevailing views about the relative role of the private and public sector made it easier to accommodate directing large amounts of aid at state owned enterprises within planned economies.

One (admittedly rather jaundiced) view on development economics characterised the then prevailing theories of development in the following terms.

External trade is at best ineffective for the economic advance of less developed countries (ldcs), and more often it is damaging. Instead, the advance of ldcs depends on ample supplies of capital to provide for infrastructure, for the rapid growth of manufacturing industry, and for the modernisation of their economies and societies. The capital required cannot be generated in the ldcs themselves because of the inflexible and inexorable constraint of low incomes (the vicious circle of poverty and stagnation), reinforced by the international demonstration effect and by the lack of privately profitable investment opportunities in poor countries with their inherently limited local markets. General backwardness, economic unresponsiveness and the lack of enterprise are well-nigh universal within the less developed world. Therefore if significant economic advance is to be achieved, governments have an indispensable as well as a comprehensive role in carrying through the critical and large-scale changes necessary to break down the formidable obstacles to, and initiate and sustain the process of, growth. (Bauer 1984, p. 1)

Current approaches to development cooperation are informed by a very different set of views about the determinants of improved wellbeing in poorer countries. The World Bank – not the only source of thinking about development cooperation, but perhaps representative of elements of mainstream ideas – stresses that development is about much more than higher incomes, and:

...encompasses, as ends in themselves, better education, higher standards of health and nutrition, less poverty, a cleaner environment, more equality of opportunity, greater individual freedom and a richer cultural life. (World Bank 1991)

Accordingly, development cooperation has shifted to addressing these ends more directly, and assisting in the development of institutions and capacities that are consistent with a more focused view on the role of the state and the benefits of openness and competition.

Given this shift in thinking about development cooperation, and the limited role that projects like Bai Bang have in Sida's current approach, there are limits on the usefulness of the lessons from Bai Bang. Many have already been incorporated in the change in the structure and focus of Sida's cooperation programs. Even so, some key messages do emerge from the Bai Bang experience and they are worth documenting. And it is worth pointing out that it is unlikely that the kind of project that Sida is now supporting in Vietnam would have been conceivable in the early 1970s. In some important ways, the Bai Bang project paved the way for a different type of cooperation activity in Vietnam, if only because it helped to cement confidence about the intentions of countries approaching cooperation from very different cultural, political and economic perspectives.

# The lessons of Bai Bang

## Policies and institutions matter – a lot

One compelling lesson from the Bai Bang experience is that the development of market institutions, prudent macroeconomic management, open trade policies and promotion of competition are really important. Much of the reason why the mill and associated forestry activities are sustainable is because of the changes brought about by *doi moi*.

It is open to question whether the successful creation of sustainable forest development would have been possible without the changes in land tenure and the decollectivisation of the forestry system. The mill would almost certainly not be financially viable – independent of subsidies from the budget or the financial system – without the liberalisation of the pricing system and the expanded autonomy given to state enterprises. Nor would its productivity performance have been achievable without the shift toward performance based remuneration. The recent investments that have improved quality and productivity may not have been possible without the adoption of more market oriented trade and exchange policies. And the spread of improved incomes in the districts surrounding the mill would not have been possible without the sanctioning of private business activities.

As discussed in chapter 9, the project almost certainly helped the economic reform process. It helped directly by exposing policy makers to alternatives – in enterprise management, technological capabilities, and wealth. It helped indirectly because it gave Sweden a place at the table in advising Vietnam as it attempted to chart the difficult waters of economic and institutional change. But, overall, it was very fortunate for the project that Vietnam embarked upon its profound reforms just as the operational phase was being started.

## Perseverance and commitment pay

Perseverance clearly can pay off. Without it the project would not have been brought to a successful conclusion. Support at the highest political levels, and throughout lower levels of government and society, is necessary if a venture of Bai Bang's scale is to be successful. It is not only the perseverance and optimism of the Swedish side that is important. The failure of similar projects in other countries (such as the Mufindi pulp and paper project in Tanzania, which was part sponsored by Sida) shows how strong the commitment and dedication by the cooperation partner has to be to make complex projects work.

## Receptivity and flexibility are important

Both Swedish and Vietnamese participants in the project had to make considerable adjustments during the course of the project. Mechanisms for adjusting project elements, accommodating shifting priorities and responding to profound changes in the project environment are important in long term projects. So are processes for quickly achieving mutually acceptable outcomes

when there are conflicts. This points to the importance of structures for interactions between cooperation partners.

### Research is essential

Sweden's willingness to provide additional resources to address each problem as it arose was also important in bringing the technical aspects to a successful conclusion. But the cost overrun experience of the project highlights the risks of making commitments without first gathering good information about the physical and socioeconomic context for projects. It must be recognised, however, that the circumstances prevailing at the time that the project decisions were made would have made it very difficult to address the information problems and still move quickly to give effect to the political imperatives in play at the time.

### Local ownership of projects is essential

The institutional framework for project implementation is very important. The transfer of implementation responsibility to local institutions seemed to make a big difference to progress in completing project construction activities and the ultimate handover process. Operation of the mill improved when the mode of foreign involvement shifted from operational responsibility to provision of advice. This was assisted by the adoption of an explicit strategy for phasing out Swedish assistance, which focused attention on empowering Vietnamese managers and workers to take control of the mill.

### Cultural differences should be prepared for

Project planners had a poor understanding of what Vietnamese society looked like in social and cultural terms at the time. As a consequence, the enormous cultural gap between Swedes and Vietnamese was not appreciated, leading to frequent cultural misunderstandings.

Project design and implementation modalities should address the management of cultural issues. The clash of approaches to many aspects of industrial management, accountability and responsibility within enterprises experienced during the project was unavoidable and, in the longer term, probably very productive. However, there were clearly problems in communication and addressing mismatched expectations that hindered progress. Advisers and foreign workers may need to be trained in handling cross-cultural communication and project managers need to be informed about the institutional, socioeconomic and cultural context in which they will be operating.

## Conditions for sustainable development

Our analysis in earlier chapters shows that the mill meets most conditions of sustainability.



*After the Swedes left the project the Vietnamese fine tuned the mill to a seemingly sustainable entity. Expansion is planned, but state intervention is still a threat to long term sustainability.*  
 Photo © Paul Rimmerfors.

- The mill is technically and financially sustainable.
- Its associated forestry operations are ecologically sustainable.
- Mill and forestry activities are socially sustainable.
- Because of its reliance on tariff protection, the mill is not yet economically sustainable. But we are optimistic that, if the mill is allowed to operate as an independent financial enterprise, it has good prospects for funding the necessary new investment and achieving the required cost reductions to ensure its economic sustainability.

The Bai Bang project is in many ways both a good and a bad example from which to draw conclusions about the conditions for sustainable development. It is a bad example because it was such an unusual project, driven by strong political imperatives that transcended many normal considerations of development project design and implementation. Its success is attributable in large part to the perseverance that the political commitment carried in its train. It is a good example because it demonstrates that improvements in economic wellbeing in developing countries has as much to do with institutions, policies and building human capital as it does with individual industrial projects and transfers of physical capital.

As this report states in a number of places, it is open to question whether any other kind of project would have been possible at the time that Bai Bang was being conceived. And, by sticking with the project through enormous difficulties, Sweden and Vietnam learnt a great deal that was useful in pursuing other forms of cooperation and in facilitating the great adventure of *doi moi* on which Vietnam is now engaged. But the time and place for projects like Bai Bang is clearly past.

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## Paper, prices and politics

Sweden's protest against the Vietnam War was given tangible form in 1969 through the decision to give economic aid to the Government of North Vietnam. The main outcome was an integrated pulp and paper mill in the Vinh Phu Province north-west of Hanoi. Known as Bai Bang after its location, the mill became the most costly, one of the longest lasting and the most controversial project in the history of Swedish development cooperation.

In 1996 Bai Bang produced at its full capacity. Today the mill is exclusively managed and staffed by the Vietnamese and there are plans for future expansion. At the same time a substantial amount of money has been spent to reach these achievements. Looking back at the cumbersome history of the project the results are against many's expectations. To learn more about the conditions for sustainable development Sida commissioned two studies of the Bai Bang project. Together they touch upon several important issues in development cooperation over a period of almost 30 years: the change of aid paradigms over time, the role of foreign policy in development cooperation, cultural obstacles, recipient responsibility versus donor led development etc.

The two studies were commissioned by Sida's Department for Evaluation and Internal Audit which is an independent department reporting directly to Sida's Board of Directors. One study assesses the financial and economic viability of the pulp and paper mill and the broader development impact of the project in Vietnam. It has been carried out by the Centre for International Economics, an Australian private economic research agency. The other study analyses the decision-making processes that created and shaped the project over a period of two decades, and reflects on lessons from the project for development cooperation in general. This study has been carried out by the Chr. Michelsen Institute, a Norwegian independent research institution.



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